APPENDIX 1

EMERY COUNTY SAN RAFAEL APPENDIX

In February 2004, the Emery County Public Lands Council has prepared the following document to submit to the Bureau of Land Management, Price Field Office with the intent and request that it be included as an appendix to the Price Field Office Resource Management Plan.

"On November 5, 1970, two lanes of Interstate 70 were opened to traffic from Green River to Fremont Junction, Utah. This section of I-70 bisected an area of the San Rafael Swell, a spectacular region of canyon country in east-central Utah. Concern for the preservation of the canyon country landscape and amenities was immediately voiced. As pressures for development of visitor facilities along I-70 intensified, it became apparent that development must be planned and controlled if the amenities were to remain."(1)

Thus was the need for some different form of land management for the San Rafael Swell expressed in a publication in 1972. Keep in mind that this was prior to the Federal Land Policy and Management Act of 1976 (FLPMA). This was also prior to Wilderness Study Areas (WSAs), Wilderness Inventory Areas (WIAs), Wilderness Reinventories, proposed National Heritage Areas (NHAs), proposed National Conservation Areas (NCAs), proposed National Monuments, Areas of Critical Environmental Concern (ACECs), Special Recreation Management Areas (SRMAs), and America's Red Rock Wilderness Bill.

What is not conveyed in the above statement is the extent to which the area had been in use prior to the 1970s. Evidence of Native American occupation is of course abundant throughout the region and is one of the resource values that current land use planning must take into consideration. About the first half of the 19th century saw consistent use of the Old Spanish Trail. Fur trappers migrated through the area probably both before and after the Old Spanish Trail period. Government surveyors and other explorers followed. Cattle and horsemen found the high desert of the Swell lush with grass for their herds and became the first to realize a direct economic benefit from the area. The first permanent Anglo-American occupation and settlement near the Swell came in the 1870s. The various settlements on each of the small streams to the west were established and Green River to the east was settled in 1879. The stability of the human population in Emery County is demonstrated in the following population data from past years:

1940	1950	1960	1970	1980	1990	2000
7072	6304	5546	5137	7485	10,332	10,860 (2)

(1) *Land Use in the Utah Canyon Country: tourism, interstate 70, and the san rafael swell, Phase II Final Report*, Lawrence Royer, Michael J. Dalton, Utah State University, 1972.
(2) Emery County Clerk.

Grazing was the dominant enterprise being practiced on the San Rafael Swell until the 1950s. Grazing district No. 7 was established under the Taylor Grazing Act in 1935 and the District headquarters was located in Price, Utah in 1937. In 1946, the functions of the General Land

Office and the Grazing Service were combined in the Department of the Interior and the Bureau of Land Management assumed administration of the San Rafael Swell.

Mineral resource values and potential are well known in the Swell. The first of many oil wells were drilled in the early twenties. Perhaps as many as three dozen had been punched by 1940. Uranium mining accounted for a surge of activity in the 1950s. Most of the roads in the San Rafael Swell were established and put into use at this time. Exploratory drilling and seismic activity during the 50s and 60s created more roads in the area. The idea that the opening of I-70 in 1970 bisected a vast roadless expanse of pristine land is erroneous. Although some isolated areas that were nearly impossible to access with the equipment of that era were left undisturbed, most of the Swell had been permanently marked by simple, dozer constructed roads by this time. The uranium mining era is the only time period in which there was a permanent population residing in this area.

In the roughly 100 years prior to FLPMA and the opening of Interstate-70, the major impacts to the San Rafael Swell and the other resources were livestock grazing and mining. By the 1970s, uranium mining had mostly played out, cheaper and more available ore was located in other areas. Mining activity and the mills which processes the ore quickly became idle. Grazing use had ballooned, been reduced and stabilized, remaining for the past thirty plus years more or less static. Historically, other traditional use of the San Rafael Swell includes wood gathering, rockhounding, camping and picnicing, (Easterin'). Some ranchers contracted with the federal government to provide horses which were raised here, the harsh climate and landscape provided training opportunities for National Guard units and was used for survival training.

In the 70s, the ideas of preservation, management and limited use began to blossom. Much greater numbers of people began taking an interest in much greater numbers of diverse resources. As we look at the current Resource Management Plan being developed in the Price Field Office, it is clear that the major challenge for land use planners today is people and vehicle management, not resource management.

There have been a number of proposals (including both congressional designation and administrative designation) in the recent past which focused on the San Rafael Swell with specific management prescriptions. It is likely that there will be more proposals in the future.

With this in mind, Emery County maintains that any future designation or prescription of the San Rafael Swell areas should be consistent with multiple use and sustained yield principles, as stated in the Emery County General Plan, relevant portions of which are set forth as follows:

- Emery County feels that public land should be managed under the "multiple-use and sustained yield" concept. Emery County's definition of multiple-use includes but is not limited to, traditional consumptive and non-consumptive uses such as grazing, all-season recreation, timber harvest, wilderness, mining, oil/gas exploration and development, agriculture, wildlife, hunting, fishing, camping, historic and pre-historic cultural resources, and watershed.
- County industries such as agriculture, timber, grazing, tourism, and mining depend on the continued use and availability of public land and its resources. Because decisions to alter

the management and use of these resources directly impact County interests, the County should be a partner in the decision-making process, not a mere recipient of its results. To help accomplish this goal, the County requests that federal and state land management agencies notify the Public Lands Council of proposed studies, research projects, planning processes, and decisions that might impact County residents.

- All public land agency management plans and proposals will be reviewed according to the County's multiple-use definition. The County will respond in a timely and appropriate manner to these management plans or resource-use decisions.
- Because the management of public land directly affects the lives and livelihoods of local citizens, the County asserts that public land management agencies have an obligation to identify and address all environmental and economic impacts that might result from decisions to alter or discontinue traditional resource uses. The County feels that these impacts should be more fully considered by agencies during the decision-making process.

As stated, there have been a number of proposals set forth to require, in some form, a special designation for the San Rafael Swell. Earlier efforts at designation included at least two attempts for National Park status. Some of the recent efforts include the:

- San Rafael Swell Natural Heritage and Conservation Act (1998) (H.R. 3625),
- The San Rafael Western Legacy District and National Conservation Act (2000), (H.R. 3605, and
- The San Rafael Western Heritage Monument (2001).

Highlights of H.R. 3625 and H.R. 3605 concentrating on the Conservation Areas of the Swell are detailed below:

H.R. 3625 105TH CONGRESS, 2ND SESSION (1998)

Mr. Cannon introduced the "San Rafael Swell Natural Heritage and Conservation Act". Following is a compilation of the highlights of the proposed Conservation Area.

TITLE II–SAN RAFAEL SWELL NATIONAL CONSERVATION AREA

Sec. 201. DEFINITION OF PLAN
A comprehensive management plan will be developed for the national conservation area under section 203.

SEC. 202. ESTABLISHMENT OF NATIONAL CONSERVATION AREA.

(A) In order to preserve and maintain heritage, tourism, recreational, historical, scenic, archaeological, paleontological, biological, cultural, scientific, educational, and economic resources, there is hereby established the San Rafael Swell National Conservation Area.

(B) The conservation area will be comprised of approximately 630,000 acres, represented on a map to be generated. The area will include "Proposed Wilderness", "Proposed Bighorn

Sheep Management Area", "Scenic Visual Area of Critical Environmental Concern", and "Semi-Primitive Non-Motorized Use Area".

(C) A map and legal description will be created and be filed with appropriate committees, and also will be available for public inspection.

(D) Subject to valid and existing rights, Federal lands within the conservation area are withdrawn from entry, appropriation, or disposal under the applicable Acts. Subject to valid and existing rights, lands within the conservation area are withdrawn from location under the general mining laws, mineral and geothermal leasing laws and the mineral material disposal laws.

(E) Commercial sale of trees, portions of trees, and forest products will be prohibited.

SEC. 203. MANAGEMENT AND USE

(A) Management Plan

(1) Not later than 5 years after enactment, the Secretary and the Advisory Council shall prepare and implement a management plan. Review the plan at least once every 10 years and revise as appropriate. Provide for public participation in the review process.

(2) Management plan will be a multiple use, sustained yield management plan that:

- conserves resources for future generation.
- provides for the present and future enjoyment of those resources, particularly heritage and outdoor recreation use, including off-road vehicles.
- provides for protection and administration of public lands and maintenance of environmental quality.
- provides for access to and enjoyment of heritage sites.

(B) Management Guidance

The Secretary shall ensure that the plan and management include:

- protection for the heritage, scientific, cultural, and educational resources.
- public use of the area.
- interpretive and educational opportunities for the public.
- a program for continued scientific investigation and study to provide information upon which to base sound management.
- enhance vegetation and restore habitat.
- identify levels, types, timing and conditions for allowable uses of lands in the NCA.
- assess the desirability of imposing appropriate fees for public uses.

(C) VISITORS CENTER

The Secretary and Advisory Council may establish a visitors center designed to interpret the history, geology, ecology, and other resources.

(D) VISITORS USE OF THE AREA

In addition to the Visitors Center, other provision may be made for visitor use, such as maps and other educational and interpretive materials.

(E) COOPERATIVE AGREEMENTS

The Secretary may provide technical assistance to, and enter into such cooperative agreements

and contracts with, the State of Utah, local governments, private entities as the Secretary deems necessary to carry out the purposes of this Act.

(F) AGRICULTURAL PRACTICES

Nothing in this Act shall be construed as constituting a grant of authority to the Secretary to restrict recognized agricultural practices or other activities on private land adjacent to or within the conservation boundary.

SEC. 204. ADDITIONS

The Secretary may acquire lands by donation, purchase with donated or appropriated funds, exchange or transfer from another Federal agency, except that such lands or interests owned by the State of Utah may be acquired only by donation or exchange.

Any lands located within the boundaries that are acquired after the date of this Act shall become a part of the conservation area.

The Secretary shall, within 4 years of enactment, identify and initiate voluntary land exchanges which would resolve ownership-related conflicts.

SEC. 205 ADVISORY COUNCIL

(A) There is established the San Rafael Swell National Conservation Area Advisory Council. The Advisory Council shall advise the Secretary regarding management of the conservation area.

- will consist of 11 members, appointed by the Secretary, representative of citizen's interests.
- 3 from recommendation from Governor of Utah.
- 5 from recommendation from Emery County Commissioners, including a representative from Public Lands Council and a representative from San Rafael Regional Heritage Council.
- 1 shall be the Director of the Bureau of Land Management in the State of Utah, or a designee.
- Remainder selected by the Secretary.
- Terms shall not exceed 4 years and shall be the same for all members. Secretary shall specify terms shorter than 4 years for the purpose of establishing staggering of terms.
- a Chairperson shall be selected from among the members.
- shall meet at least twice a year.
- shall serve without pay except for travel and per diem for meetings.
- Advisory Council terminates after 10 years.

SEC. 206. RELATIONSHIP TO OTHER LAWS AND ADMINISTRATIVE PROVISIONS

(A) Nothing in this title shall be construed as limiting the applicability to lands in the conservation area of laws applicable to public lands generally, including the National Historic Preservation Act, the Archeological Resources Protection Act or the Native American Graves Protection and Repatriation Act.

(B) Status of lands not administered by the BLM will not be altered.

(C) Propagation of plants (including seeds) and vegetative enhancement withing the NCA shall not be inhibited.

Subtitle B–Wilderness Areas Within Conservation Area

SEC. 221. DESIGNATION OF WILDERNESS

(A) The following lands represented on Map XX, are hereby designated as wilderness.

- Crack Canyon Wilderness Area, 19,676 acres
- Mexican Mountain Wilderness Area, 27, 953 acres.
- Muddy Creek Wilderness Area, 37,010 acres.
- San Rafael Reef Wilderness Area, 46, 079 acres.

A map will be generated and given to the appropriate committees. The map will be available for public inspection.

SEC. 222. ADMINISTRATION OF WILDERNESS AREAS

Subject to valid and existing rights, each area designated by this title shall be administered in accordance with this Act and the Wilderness Act.

Any lands within the boundaries of an area designated as wilderness that is acquired by the United States after the date of enactment, shall be added to and administered as part of the wilderness area.

The Secretary and the Advisory Council will prepare plans in accordance with section 202, Federal Land Policy and Management Act, to manage the areas designated as wilderness.

Subtitle C–Other Special Management Areas

SEC. 231. SAN RAFAEL SWELL DESERT BIGHORN SHEEP MANAGEMENT AREA

There is hereby established in the conservation area the San Rafael Swell Desert Bighorn Sheep Management Area (Management Area). The purposes of the management area are the following:

- to provide for the prudent management of Desert Bighorn Sheep and their habitat.
- to provide opportunities for watchable wildlife, hunting, and scientific study of Desert Bighorn Sheep and their habitat.
- to provide a seed source and a gene pool to protect genetic diversity within the species.
- to provide educational opportunities to the public.

The management area shall consist of approximately 66,071 acres in the Sid's Mountain area within the NCA.

Mechanized travel shall not be allowed in the management area except:

- mechanized travel on designated roads and trails.
- mechanized travel by personnel of the Utah Division of Wildlife Resources and the Bureau of Land Management, including overflights of aircraft and landings of helicopters, may be allowed as needed to manage the Desert Bighorn Sheep and their habitat.

A management plan for Desert Bighorn Sheep will be included in the management plan of the conservation area under section 203. The plan will establish goals and management steps to achieve the purposes of the management area.

The Secretary will cooperate with the Utah Division of Wildlife Resources and the Advisory Council in developing the management plan for the management area. Facilities may be established, operated and maintained within the management area for the purpose of properly and safely managing the area.

SEMI-PRIMITIVE NON-MOTORIZED USE AREAS

The purpose of the semi-primitive non-motorized areas are:

- to provide opportunities for isolation from the sights and sounds of man.
- to provide opportunities to have a high degree of interaction with the natural environment.
- to provide opportunities for recreational users to practice outdoor skills in settings that present moderate challenge and risk.

The semi-primitive areas shall consist of approximately 109,487 acres of federally owned land within the conservation area. A management plan will be will be developed for the semi-primitive areas under section 203. It will establish goals and management steps to achieve the purposes established above.

SEC. 233. SCENIC VISUAL AREA OF CRITICAL ENVIRONMENTAL CONCERN

The Secretary shall designate a scenic visual area of critical environmental concern (scenic ACEC). The purpose of the scenic ACEC is to preserve the scenic value of the Interstate Route 70 corridor within the conservation area.

The area of the scenic ACEC is the area generally bordering I-70 and depicted on the map.

TITLE III–ADDITIONAL WILDERNESS AREAS OUTSIDE OF CONSERVATION AREA; WILDERNESS ADMINISTRATION PROVISIONS

SEC. 301. DESIGNATION OF WILDERNESS

The following lands located outside the conservation area, depicted on the map, are hereby designated as wilderness:

- Desolation Canyon Wilderness Area, (Carbon County), 109,050 acres.
- Desolation Canyon Wilderness Area, (Emery, County), 119,650 acres.
- Turtle Canyon Wilderness Area, 31,450 acres.
- Horseshoe Canyon Wilderness Area, 16,600 acres.

SEC. 302. ADMINISTRATION OF WILDERNESS AREAS

Subject to valid and existing rights, each area designated as wilderness by this title shall be administered by the Secretary in accordance with this title and the Wilderness Act.

SEC. 303. LIVESTOCK

Grazing of livestock in areas designated as wilderness by this Act, where such grazing is established before the date of the enactment of this Act, shall:

- continue and wilderness values shall not be used as a factor to reduce or withdraw grazing in designated areas or in the management of wilderness.
- be administered in accordance with section 4(d)(4) of the Wilderness Act and the guidelines set forth in House Report 96-1126.

SEC. 304.WILDERNESS RELEASE

The Congress finds and directs that public lands in the Counties of Emery and Carbon in the State of Utah administered by the Bureau of Land Management have been adequately studied for wilderness designation pursuant to section 603 of FLPMA.

Any public lands administered by the BLM in Carbon and Emery Counties not designated as wilderness by this title are no longer subject to section 603(c) of FLPMA. Such lands shall be managed for public uses as required in section 103(c) of FLPMA.

TITLE IV–GENERAL MANAGEMENT PROVISIONS

SEC. 401. LIVESTOCK GRAZING

The Secretary shall permit domestic livestock grazing in areas of the conservation area, and in areas of semi-primitive areas outside of the conservation area, where grazing was established before this Act.

SEC. 402. CULTURAL AND PALEONTOLOGICAL RESOURCES

Shall allow for the discovery of, shall protect, and may interpret, cultural or paleontological resources located within areas designated as part of the conservation area or as a wilderness or semi-primitive area under this Act. The means of discovery authorized shall be those means conventional to the science of archeology.

SEC. 403. NATIVE AMERICAN CULTURAL AND RELIGIOUS USES

In recognition of the past use by Native Americans for traditional cultural and religious purposes of sites within areas designated as part of the conservation area or as a wilderness or semi-primitive area under this Act, the Secretary shall assure nonexclusive access from time to time to those sites by Native Americans for such purposes, including (but not limited to) wood gathering for personal use or collecting plants or herbs for religious of medicinal purposes.

SEC. 404. AIRCRAFT

Low level overflights not precluded.

BLM and UDWR may use helicopters in management of Bighorn Sheep within the management area.

SEC. 406. LAND EXCHANGES RELATING TO SCHOOL AND INSTITUTIONAL TRUST LANDS

Not later than 1 year after enactment, the Governor may identify and notify the Secretary of any school and institutional trust lands the value or economic potential of which is diminished by establishment of the conservation area or designation of any wilderness or semi-primitive area under this Act.

Not later than 2 years after the date of receipt of notification under subsection (a) regarding lands, the Secretary shall acquire all right, title, and interest in the lands identified in the notice, by exchange with the State of Utah for Federal Lands that are of approximately equal value to the identified lands and that are located in the State.

SEC. 407. WATER RIGHTS

(a) Nothing in this Act or any other Act of Congress shall constitute or be construed to constitute either an express or implied Federal reservation of water or water rights for any purpose arising from the designation of areas as part of the conservation area or as a wilderness or semi-primitive area under this Act.
(b) The United States may acquire and exercise such water rights as it deems necessary to carry out its responsibilities on any lands designated as part of the conservation area or as a wilderness or semi-primitive area under this Act pursuant to the substantive and procedural requirements of the State of Utah. No eminent domain. All rights to water granted by State of Utah may be exercised in accordance with the requirements of the State of Utah.
(c) Nothing in this Act shall be construed to limit the exercise of water rights as provided under the laws of the State of Utah.
(d) Nothing in this Act shall affect the maintenance, repair, modification, replacement, or improvement of, or ingress to or egress from, irrigation, pumping, storage, and transmission facilities associated with municipal, industrial, agricultural, livestock, or wildlife purposes in existence before enactment, whether located within or outside of the boundaries of areas designated as part of the conservation area or as a wilderness or semi-primitive area under this Act.
(e) This Act shall not affect the operation of any facility on the Colorado River or its tributaries. Nor will it affect any pact or agreement pertaining to the waters of the Colorado River or its tributaries.

SEC. 408. MISCELLANEOUS

State of Utah will retain jurisdiction and responsibilities with respect to fish and wildlife management activities.

Congress does not intend any creation or designation of protective perimeters or buffer zones

around the area.

Where roads form the boundaries of a designated area, the boundary of the area shall be set back from the centerline of the road as follows:

- 300 feet for paved highways.
- 200 feet for high standard roads classified as County Class B roads.
- 100 feet for roads equivalent to County Class D roads.

Subject to valid existing rights, reasonable access shall be allowed to existing improvements, structures, and facilities, including those related to water and grazing resources, which are within the conservation area or a wilderness or semi-primitive area designated under this Act, whether located on Federal or non-Federal lands, in order that they may be operated, maintained, repaired, modified, or replaced as necessary.

"Reasonable Access" means right of entry and includes access by motorized transport when necessarily, customarily, or historically employed on routes in existence as of the date of the enactment of this Act.

The Secretary shall offer to acquire from non-governmental entities lands and interests in lands located within or adjacent to the conservation area or a wilderness or semi-primitive area designated under this Act. Lands may be acquired under this subsection only by exchange or purchase from willing sellers.

H.R. 3605 106TH CONGRESS, 2ND SESSION (2000)

Mr. Cannon introduced the "San Rafael Western Legacy District and National Conservation Act. Following is a compilation of the highlights of the proposed Conservation Area.

TITLE II–SAN RAFAEL NATIONAL CONSERVATION AREA

SEC. 201. DESIGNATION OF THE SAN RAFAEL NATIONAL CONSERVATION AREA.

(A) In order to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the unique and nationally important values of the Western Legacy District and the public lands described in subsection (b), including historical, cultural, natural, recreational, scientific, archeological, paleontological, environmental, biological, wilderness, wildlife, educational, and scenic resources, there is hereby established the San Rafael National Conservation Area.

(B) The NCA shall consist of approximately 947,000 acres of public land. The boundary of the NCA shall be set back 300 feet from the edge of I-70 right-of-way and from the edge of the State Route 24 right-of-way.

(C) The Secretary will submit to Congress a map and legal description. Copies of the map

and legal description shall be on file and available for public inspection.

SEC. 202. MANAGEMENT OF THE SAN RAFAEL NCA.

(A) The Secretary shall manage the NCA in a manner that conserves, protects, and enhances its resources and values, including those resources and values specified in section 201(A) and pursuant to the Federal Land Policy and Management Act of 1976 (FLPMA).

(B) The Secretary shall allow such uses of the Conservation Area as the Secretary finds will further the purposes for which the NCA is established. Except where needed for administrative purposes or to respond to an emergency, use of motorized vehicles shall be permitted as part of the management plan prepared pursuant to subsection (E).

(C) Withdrawals. Subject to valid and existing rights, all lands within the NCA are hereby withdrawn from all forms of entry, appropriation, or disposal and from location, entry, and patent under the mining laws, and from operation of the mineral leasing and geothermal leasing laws. The Secretary may authorize the installation of communication facilities within the NCA, but only to the extent that they are necessary for public safety purposes.

(D) The Secretary shall permit hunting, trapping, and fishing within the NCA in accordance with applicable laws. After consultation with the Utah Division of Wildlife Resources, regulations may be issued designating zones where and establishing periods when no hunting, trapping, or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment.

(E) Within 4 years after the enactment, the Secretary shall develop a comprehensive plan for the long-range protection and management of the NCA. The plan may incorporate appropriate decisions contained in any current management or activity plan for the area and may use information developed in previous studies of the lands within or adjacent to the area.

(F) The State of Utah and the Secretary may agree to exchange Federal lands, Federal mineral interests, or payment of money for lands and mineral interests of approximately equal value that are managed by the Utah School and Institutional Trust Lands Administration and inheld within the boundaries of the NCA.

(G) The Bureau of Land Management (BLM) the State of Utah, and Emery County may agree to resolve section 2477 of the Revised Statutes and other access issues within the NCA.

(H) Nothing in this Act shall be deemed to diminish the responsibility and authority of the State of Utah for management of fish and wildlife within the Conservation Area.

(I) There the Secretary of the Interior currently permits grazing, such grazing shall be allowed subject to all applicable laws, regulation, and executive orders.

(J) The Congress does not intend for the establishment of the Conservation Area to lead to the creation of protective perimeters or buffer zones.

(K) Establishment of the NCA shall not be construed to give rise to either an implied or express reservation of any water or water rights pertaining to either surface or ground water. Nothing in this title shall affect any valid existing surface water or ground water right in effect on the date of the enactment of this Act or any water right hereafter approved pursuant to the laws or the State of Utah or any other State.

(L) Nothing in this Act alters the provisions of the Wilderness Act of 1964, or the Federal Land Policy and Management Act of 1976 as they pertain to wilderness resources within the NCA. Recognizing that the designation of wilderness areas requires an Act of Congress, the BLM, the State of Utah, Emery County, and affected stakeholders may work toward resolving various wilderness issues within the Conservation Area.

COMMENTS AND COMPARISON OF H.R 3605 (1998), H.R. 3625 (2000)

H.R. 3625 (98) is smaller in AREA, (630,000 acres) than H.R. 3605 (947,000 acres). It generally encompasses the boundary of the prominent geology of the San Rafael Swell. The Eastern boundary generally follows Sid's Mtn. WSA, close to the Devil's Cyn rim south of I-70, the canyon rim above the Muddy Creek on the east. It then follows the southern boundary of the Reef north and east back to I-70, continuing north along the reef, including the Mexican Mtn WSA, then westerly to the Wedge and Buckhorn Draw area. This is a well defined area and is inclusive of the WSA's in the San Rafael Swell.

H.R. 3605 is more focused on the Western Legacy District (a Heritage area) than on land use planning. An advisory council is created under the Legacy District, not specifically for the Conservation area. Funding is also under the umbrella of the Legacy District.
3625 is much more specific in the definition of a land use plan. 3625 provides for "Proposed Wilderness", "Proposed Bighorn Sheep Management Area", "Scenic Visual Area of Critical Environmental Concern" and "Semi-Primitive Non-Motorized Use Area". 3605 doesn't specifically address designation of areas under any of these specific titles.

Both bills effectively eliminate any new mining, drilling or sand and gravel development except where "valid and existing rights" are currently in place.

Responsibility for management of fish and wildlife is retained by Utah Division of Wildlife Resources in both bills.

Both bills allow for the exchange of land by SITLA and BLM.

Grazing would continue to be subject to applicable laws and guidelines in both proposals.

Water rights would be recognized as approved by the State of Utah in each proposal.

3605 establishes NCA boundaries that are set back from I-70 and SR-24 by 300 feet. 3625 establishes all boundaries as:
300 feet from centerline of paved roads.
200 feet from centerline of high standard roads classified as County Class B roads.
100 feet form centerline of roads equivalent to County Class D roads.

Both bills provide for motorized access for administrative purposes and emergency (search and rescue) situations.

3625 proposes a possible visitor's center. It also provides for the establishment of an eleven member advisory council for the NCA.

NATIONAL MONUMENT PROPOSAL

In 2001, Emery County Public Lands Council entered into some discussion and input from county residents, interest groups and many others regarding the possibility of designating a national monument on the San Rafael Swell. Following are some issues of concern that at the time were developed as "Local Parameters and Requirements for support of a National Monument Designation".

The Emery County Public Lands Council have concluded that National Monument designation, as framed in this document, offers the best model currently available for achieving local, state, and national objectives for the management of these lands.

This document proposes the establishment of a *San Rafael Swell Heritage National Monument.*

The following are important considerations that must be documented in either the proclamation itself, or in supporting documents and internal memoranda from the Secretary of the Interior and/or the Director of the Bureau of Land Management. These elements are essential to obtaining Emery County's support for a national monument designation and if they are not addressed to the satisfaction of Emery County, local support for a monument designation will be withdrawn.

Monument Emphasis

Primary management emphasis and purpose will be for the proper care and management of the historical and cultural objects and resources. It is important that his monument have as its primary emphasis the protection and showcasing of the "historic" resources, rather than the "scientific" resources, as was the case with the Grand Staircase-Escalante National Monument.

The distinguishing characteristic that sets the San Rafael Swell uniquely apart from the other

slick rock areas of the West is found in tracing the footprints of history that have left their mark upon its landscape. Nearly all of the historical forces and movements that shaped the destiny and romance of the old West have touched the San Rafael Swell in one way or another.

The development of these historic themes, along with the hope of creating heritage tourism opportunities, has been a vital component of local planning efforts from the beginning. The original San Rafael legislation presented to Congress in 1998 called for the creation of a National Heritage Area in the region. The subsequent San Rafael proposal that Congress considered in 2000 sought to establish a National Western Legacy District.

This management emphasis on the historic resources of the monument is not intended to diminish in any way the tremendous importance of protecting and conserving the public lands and natural resources. Protection of these public lands treasures and the natural environment is also central to the purposes for which monument designation is being sought.

Multiple Use/Visitor Friendliness

We envision a visitor friendly monument that accommodates a wide variety of uses and activities. It is our intent with this designation to create a visitor attraction, not a science museum. While there are many areas within the proposed monument which are rugged, remote, and suitable only for back-country experiences, much of the San Rafael Swell is very accessible by means of existing roads, and readily lends itself to visitation by recreationists and by the casual tourist.

As much as possible, we intend to draw visitors into the surrounding communities and to existing community based facilities and amenities, such as museums and visitor information centers. Doing so will minimize the impacts on the lands themselves, while at the same time increasing the economic returns to the communities. Though our strategy is to establish the communities as the tourism hubs and staging areas, there will undoubtably continue to be large numbers of visitors traveling to the interior of the monument to experience its magnificent historic and scenic attractions.

Boundaries

Our monument proposal includes approximately 620,000 acres, and is similar in size to the original 1998 NCA proposal. It also includes the Cleveland /Lloyd Dinosaur quarry area, even though this area will not be contiguous to the principal land area of the monument....the boundary will follow easily discernable topographic features rather than arbitrarily determined boundaries. The San Rafael Swell is a circular geologic uplift that has topographic features easily visible and discernible to the naked eye. The sandstone cliffs and reefs rise impressively up from the surrounding lands. The terrain within this uplift is uniquely and spectacularly scenic and attractive. These lands clearly and obviously merit inclusion in a National Monument, and rival the scenic qualities of many of our nation’s National Parks. The lands outside the boundaries of this proposal clearly do not.

These proposed boundaries deliberately seek to avoid the large gypsum deposits on the western edge of the proposed monument, which include operating open-pit gypsum mining operations and numerous additional mining claims. The Antiquities Act states that the President "...may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with proper care and management of the objects to be protected." The smallest area compatible with the proper care and management of the objects to be protected, al well as the area that is the most logical and practical in terms of manageability and consistency, is that which is presented in this proposal.

Monument Access

Access is one of the most critical aspects of the monument proposal, because it affects all of the other uses associated with these lands. Appropriate access to heritage sites and to facilitate recreation and valid uses is essential.

(At this point, the text of this document discusses the San Rafael Route Designation Plan which was being developed at the same time. The argument is made that it would be wise and acceptable to allow the Route Designation Plan to be the management plan for the proposed monument, since the NEPA process would have been completed.)

There will also be language ensuring that Emery County's claims to its RS2477 rights-of-way will not be invalidated by monument designation.

Language Provisions

The proclamation creating the new monument must include clauses that protect the vital interests of the State of Utah, Emery County and the rights and safety of the citizens of the state. These clauses would address such issues as:

- No Federal reservation of water or water rights
- Continuance of valid existing rights (VER)
- No infringement on the jurisdiction of the State of Utah with respect to fish and wildlife management
- Grazing will continue to be administered under existing laws and regulations
- No adverse effect on existing communications sites and facilities, and the ability to appropriately install additional communications equipment if needed for public safety purposes
- No adverse effects on the scientific study of, access to, or professional removal of paleontological and archeological resources due to the establishment of the monument. Access will be addressed in the Route Designation Plan

Monument Advisory Council

Emery County and the Emery County Public Lands Council have been very effective in communicating and collaborating with Federal land Management agencies, the environmental community, and other stakeholders in addressing land management issues. We see great value in formalizing these activities with respect to the monument through the establishment of a monument advisory council, which would include local and state representation, as well as representation from other appropriate sectors and disciplines. We view the opportunity for ongoing state and local input into planning and management decisions affecting the monument through a FACA chartered advisory council as an essential element of this proposal. We desire solid assurances that a monument advisory council will be established with representatives to advise the monument manager on such things as history, recreation, qrazing, tourism, wildlife, local government, and local economic and social issues related to the achievement of management plan objectives.

Ranching as a Historical Use / Resource

In addition to language which ensures that grazing will continue to be administered under existing laws and regulations, we will also have language which will recognize livestock ranching activities as being part of the historic and cultural landscape, and therefore among the historic resources we intend to protect with monument designation. Ranching and grazing are part of the history we are protecting. They are an inseparable part of the Swell's historic landscape, therefore, these activities are part of what we intend to preserve as part of the monument.

We do not want to see any reductions in AUM levels on the San Rafael Swell. If, however, there is a move to reduce AUMs in the future due to pressures from such things as increased tourism and recreation use, it is our position that ranchers should be compensated for those AUMs. We will work with the BLM and all other appropriate entities to find the means to compensate ranchers for any such losses.

Local Involvement in the development of the Monument Plan

Emery County has Cooperating Agency status, and therefore expects to be included as a full partner on the monument planning team and as a full partner in the planning process.

Wilderness

National monument designation is widely recognized and accepted as providing a very high level of protection for natural environments. We are pleased that those same levels of protection will apply to the lands of the *San Rafael Western Heritage Monument* This designation will be a significant and perpetual commitment to the conservation and protection of these lands.

Respecting concerns regarding the status and management of Wilderness Study Areas, as well as concerns related to certain other lands that are viewed by some as having wilderness characteristics we propose that WSAs within the monument boundaries continue to be managed under the FLPMA non-impairment standard.

Withdrawls

It is understood that lands within the monument would be withdrawn from all types of entry, location, selection, sale, or leasing, and that activities such as mining, drilling, and timbering would be prohibited, except, except in cases where a valid existing right has been established.

GUIDING PRINCIPLES FOR POSSIBLE FUTURE SPECIAL DESIGNATION IN THE SAN RAFAEL SWELL AREA

Summary

From the brief history of proposed special designation for the San Rafael Swell area, it should be obvious that the citizens of Emery County have attempted to actively participate in all efforts to develop a realistic plan which provides adequate and acceptable measures to assure that future generations may benefit from the abundant resources of our public land. It should also be obvious that the best land use planning will not be found at the extreme ends of possible land planning. Emery County does not want to turn the San Rafael Swell into an OHV playground with no limits, nor do we advocate irresponsible overgrazing. On the other hand, we strongly oppose efforts to eliminate or substantially curtail these uses as well as potential future mineral uses, and we wish to preserve the use of those resources which benefit the local population economically and socially. Interaction of the people and the public land continues to be of special significance to the United States, and should be considered in itself to be a resource. Extreme proposals which eliminate all use other than what can be “experienced” in the realm of non-motorized recreation is in fact non-management. The mentality of “locking away our national heritage,” so much in vogue with some today, is nothing more than the mentality of placing what is valuable to us in a glass museum case; look but don’t touch, don’t experience it or enjoy it and by all means don’t allow anyone else to benefit from it. At first glance this mentality seems innocent enough, a mere profession of concern for “mother Earth”. But on closer inspection it is merely a pretext to mask a more serious and sinister purpose so prevalent among those who don’t live in and therefore don’t understand, the rural west: the conscious oppression of human activity and civilization in Emery County.

Thus, Emery County believes that should special designation for the San Rafael Swell (congressional or administrative), be chosen as a management alternative in the future, the most responsible alternative is a conservation, multiple-use friendly management prescription somewhere between the two extreme positions, which upholds and preserves the landscape, but upholds and preserves time-honored traditional uses of that landscape, from grazing, to OHV use, to mineral development. We feel that previous proposals have been legitimate attempts at

resolving the land management issue, and would prefer that any designation closely reflect the elements set forth in those proposals. Valid and existing rights must be recognized. Consistency with Emery County's General Plan is expected and mandated by FLPMA and NEPA. Designation of any kind should not inhibit local communities from further development and utilization of available water. Following are some recommendations.

Emphasis

The emphasis of any designation should be toward user friendly, multiple use and sustained yield principles with proper care and management of historical and cultural resources. A management plan should be written that would:

- provide for the sustained yield of multiple resources through future generations.
- provide for the present and future enjoyment of those resources, particularly grazing use, heritage and outdoor recreation use, including off-road vehicles.
- provide for protection and administration of public lands and maintenance of environmental quality.
- provide for access to and enjoyment of heritage sites.

Any designation needs to ensure that the plan and management include:

- protection for the heritage, scientific, cultural, wildlife and educational resources.
- public use of the area.
- interpretive and educational opportunities for the public.
- a program for continued scientific investigation and study to provide information upon which to base sound management.
- enhance vegetation and restore habitat for both livestock and wildlife.
- identify levels, types, timing and conditions for allowable uses of lands in the designated area.
- assess the desirability of imposing appropriate fees for public uses.
- incorporate adaptive management practices to allow future changes in land use to be addressed in a timely manner.
- retention of Emery County's Cooperating Agency Status.

An adequate number of visitor centers should be designed to interpret the history, geology, ecology, and other resources. We would intend to create a visitor attraction, not a science museum. While there are many areas within the San Rafael Swell which are remote, difficult to access, and can provide back-country recreation, most of the area is very accessible by existing roads. Any designation should emphasize that it is a visitor oriented area.

Advisory Council

We suggest that an advisory council be appointed to act in developing the management plan and implement that plan. The advisory council:

- will be subject to the Federal Advisory Council Act (FACA).
- will consist of 11 members, appointed by the Secretary, representative of citizen's interests.
- 3 from recommendation from Governor of Utah.
- 5 from recommendation from Emery County Commissioners, including a representative from Public Lands Council.
- 1 shall be the Director of the Bureau of Land Management in the State of Utah, or a designee.
- Remainder selected by the Secretary.
- Terms shall not exceed 4 years and shall be the same for all members. Secretary shall specify terms shorter

than 4 years for the purpose of establishing staggering of terms.
- a Chairperson shall be selected from among the members.
- shall meet at least twice a year.
- shall serve without pay except for travel and per diem for meetings.
- shall comply with FACA and FLPMA

Boundary

We propose the boundary for any designated area be that represented on Map XX, which includes within its boundaries 602,000 acres, realizing that it may be wise to realign said boundary to conform to on-the-ground manageability.

Agricultural Practices

Any designation shall permit domestic livestock grazing within the designated area to the AUM usage allowed by forage conditions as originally contemplated under the Taylor Grazing Act and other applicable regulations.

Grazing of livestock in areas designated as Wilderness or Wilderness Study Areas, where such grazing is established before the date of any designation shall:

- continue and wilderness values shall not be used as a factor to reduce or withdraw grazing in designated areas or in the management of wilderness.
- be administered in accordance with section 4(d)(4) of the Wilderness Act and the guidelines set forth in House Report 96-1126.

Livestock ranching activities, including water improvement projects and structures, should be recognized as being part of the historic and cultural landscape, and therefore among the historic resources intended to be protected by designation.

Fish and Wildlife

Any designation shall permit hunting, trapping, and fishing in accordance with applicable laws. After consultation with the Utah Division of Wildlife Resources, regulations may be issued designating zones where and establishing periods when no hunting, trapping, or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment.

No designation shall diminish the responsibility and authority of the State of Utah for management of fish and wildlife within the Conservation Area.

Over flights by fixed wing and helicopter, including the use of landing zones and staging areas, will continue to be practicable for the purpose of wildlife management.

Water

- Nothing in any special designation shall constitute or be construed to constitute either an express or implied federal reservation of water or water rights for any purpose arising from the designation of areas as part of the designated area or as a wilderness area under any such designation.
- The United States may acquire and exercise such water rights as it deems necessary to carry out its responsibilities on any lands designated as part of the area or as a wilderness area under any designation pursuant to the substantive and procedural requirements of the State of Utah. No eminent domain. All rights to water granted by State of Utah may be exercised in accordance with the requirements of the State of Utah.
- No designation shall be construed to limit the exercise of water rights as provided under the laws of the State of Utah.
- No designation shall affect the maintenance, repair, modification, replacement, or improvement of, or ingress to or egress from, irrigation, pumping, storage, and transmission facilities associated with municipal, industrial, agricultural, livestock, or wildlife purposes in existence before enactment, whether located within or outside of the boundaries of areas designated.
- Any designation shall not affect the operation of any facility on the Colorado River or its tributaries. Nor will it affect any pact or agreement pertaining to the waters of the Colorado River or its tributaries.

Areas of Critical Environmental Concern (ACECs)

Any ACECs which are incorporated in any way into any designation should be managed in no greater than the smallest area required, and the least restrictive means necessary to protect irreparable damage to important and relevant values recognized in the FLPMA definition of an ACEC, and only where adequate science has shown that irreparable damage will result otherwise.

Wilderness

The following, existing Wilderness Study Areas (WSAs) receive Concressional approval for inclusion in the National Wilderness Preservation System:

- Crack Canyon WSA25,335 acres
- Devil's Canyon WSA 9,610 acres
- Muddy Creek WSA31,400 acres
- San Rafael Reef WSA59,170 acres
- Sid's Mountain WSA 80,970 acres
- Mexican Mtn.59,600 acres

Cultural and Paleontological Resources

Designation shall allow for the discovery of, shall protect, and may interpret, cultural or paleontological resources located within areas designated as part of the conservation area or as a wilderness or semi-primitive area under this Act. The means of discovery authorized shall be those means conventional to the science of archeology.

R.S.2477 Rights of Way

Any special designation in the San Rafael Swell area must expressly recognize the State and County's R.S. 2477 rights of way to all roads for which such rights apply. Any legislation that effects this special designation should specify, to Emery County's satisfaction, the precise length, GPS centerline location, width of disturbance and other relevant indications of location and size of road, for all such roads in the Swell to which the State and County has a valid right of way under R.S. 2477. Such legislation should also mandate that the State and County's use and enjoyment of such right of way shall be upheld by the BLM consistent with any relevant Sate or County transportation plan. As part of the Congressional designation process, the legislative language should include the proper Congressional confirmation of the State and County's R.S. 2477 existing easment rights in such roads, and the proper Congressional disclaimer by the United States of the dominant estate interest to such roads. Any special designation and the resulting plan should expressly provide that it shall not be construed to impact or hinder in any way the Sate and Emery Count's continuous undisturbed right of enjoyment of those rights of way conferred under R.S. 2477 on roads across public lands in the San Rafael Swell.

Access

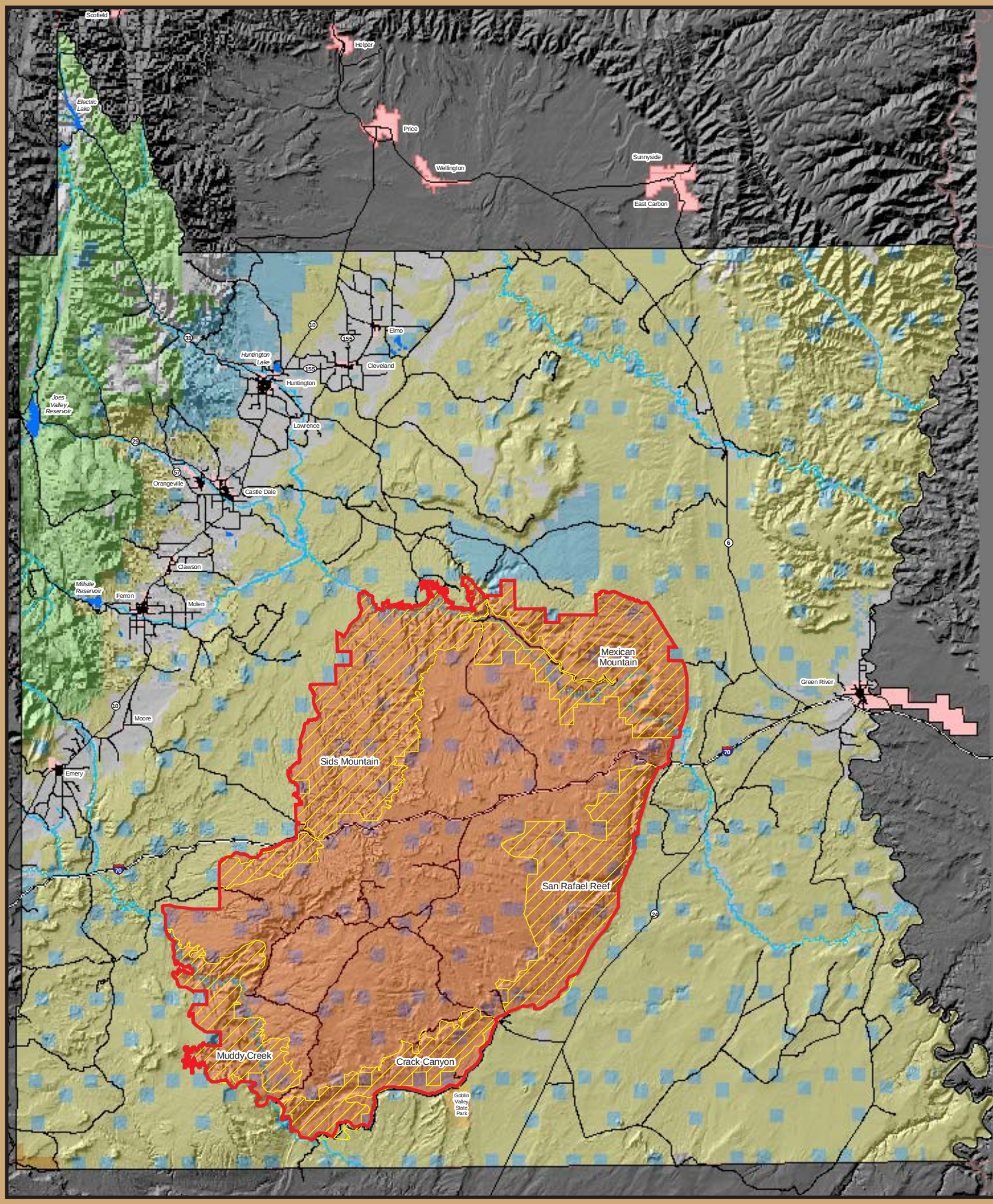
Access is one of the most critical aspects of any proposed designation, because it affects all of the other uses associated with these lands. Appropriate access to heritage sites, to facilitate recreation and other valid uses is essential. The Route Designation Plan for the San Rafael Resource Management Area has been completed. The Price Field Office is in the process of developing the Price River Resource Area Route Designation Plan. The two plans will be combined to serve as the travel plan for the Price FO. This should be adopted as the travel plan for any specially designated area, with the following caveats.
Where roads form the boundaries of a designated area, the boundary of the area shall be set back from the centerline of the road as follows:

- 300 feet for paved highways.
- 200 feet for high standard roads classified as County Class B roads.
- 100 feet for roads equivalent to County Class D roads.

Subject to valid existing rights, reasonable access shall be allowed to existing improvements, structures, and facilities, including those related to water and grazing resources, and improvements for wildlife which are within the boundaries of any designated area, whether located on Federal or non-Federal lands, in order that they may be operated, maintained, repaired, modified, or replaced as necessary.

“Reasonable Access” means right of entry and includes access by motorized transport when necessarily, customarily, or historically employed on routes in existence as of the date of the enactment of any designation.

Emergency access into a designated area, including WSA’s, will not be hindered ay the designation. Emergency access may include OHV’s, full sized passenger vehicles and aircraft.


Scofield
Helper
Electric Lake
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Wellington
Sunnyside
East Carbon
Elmo
Huntington Lake
Cleveland
Huntington
Joes Valley Reservoir
Lawrence
Orangeville
Castle Dale
Clawson
Millsite Reservoir
Ferron
Molen
Moore
Emery
Green River
Mexican Mountain
Sids Mountain
San Rafael Reef
Muddy Creek
Crack Canyon
Goblin Valley State Park
WSA Boundary
Proposed Boundary
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Forest Service
State/National Park
Private
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Water
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Miles
EMERY COUNTY
IT DEPARTMENT
This map is made for viewing purposes only. Emery County assumes no liability for the accuracy of this map.
Map Printed On 02/03/04

APPENDIX 2

San Rafael Swell Special Area

Coordinate with partners on management of the San Rafael Swell for special management of the cultural, heritage, and natural resources of the region. For the purposes of consideration and analysis within the RMP/EIS process, this area will be referred to as the "San Rafael Swell Special Area," or SRS-SA.

The purpose of the San Rafael Swell Special Area (SRS-SA) would be to manage resource uses to enhance holistic opportunities for recreation, interpretation, scientific study, and resource use for local, regional and national interests. Future management should:

1. Promote the preservation, conservation, interpretation and development of the historical, cultural, scientific, natural and recreational resources of the San Rafael Swell region.
2. Encourage a broad range of sustainable economic and recreation opportunities to enhance the quality of life for present and future generations.
3. Work to preserve the cultural, historical, scientific, natural and recreational resources of the San Rafael Swell with a regional framework requiring cooperation among local property owners and Federal, State and local government entities.
4. Use partnerships between Federal, State, and local governments, local and regional entities of these governments, and the private sector that will offer the most effective opportunities for the enhancement and management of the cultural, historical, scientific, natural, and recreational resources of the San Rafael region.

In order to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the unique and nationally important historical, cultural, paleontological, scenic, scientific, biological, educational, wildlife, riparian, wilderness, endangered species, and recreational values and resources associated with the San Rafael Swell, establish the San Rafael Swell Special Area.

BLM would recommend the establishment of a FACA authorized Advisory Committee to provide input for management of the San Rafael Swell Special Area. Secretary or Congressional action could include such authorization.

Potential purposes of San Rafael Swell Special Area Advisory Committee could include:

- Advise BLM managers on multiple use and science issues
- Review appropriate reports
- Make recommendations on protocols and projects to implement management prescriptions
- Assist in resource and use inventory and in data collection and analysis
- Assist in identification and development of user facilities, which could include cultural, heritage and/or scientific interpretation, day-use or camping facilities and dispersed camping areas
- Assist in development of visitor use zones (if determined to be the best tool for visitor experience management) and develop management framework for management of such zones
- Assist in development and application of adaptive management concepts in resource and use management
- Investigate funding opportunities (grants, matching opportunities, etc…)
- Facilitate communication with stake holders or other agencies
- Provide insight into community concerns
- Identify opportunities for economic development
- Serve as information conduits between BLM and the groups and interests they represent
- Serve as a collaborative group with the BLM, State of Utah, Local governments, and area users

The San Rafael Swell Special Area is located within the San Rafael Swell Special Recreation Management Area as proposed in Alternatives D.

WSAs – The area includes the Sid's Mountain, Mexican Mountain, San Rafael Reef, Crack Canyon, Muddy Creek, Link Flats, and Devil's Canyon Wilderness Study Areas. (See Map 3-27 in this volume.)

ACECs – (See Map 2-46 in this volume.)

MULTIPLE USE MANAGEMENT PRESCRIPTIONS	
ACCESS	IN GENERAL- The BLM would maintain adequate access for the reasonable use and enjoyment of the SRS-SA. PRIVATE LAND- The BLM would provide reasonable access to privately owned land or interests in land within the boundaries of the SRS-SA. EXISTING PUBLIC ROADS- The BLM is authorized to maintain existing public access within the boundaries of the SRS-SA in a manner consistent with the purposes for which the SRS-SA would be established. Transportation system maintenance and construction would be in close coordination with local governments, respecting established maintenance and right-of-way responsibilities. OHV - Except where needed for administrative purposes or to respond to an emergency, use of motorized vehicles in the SRS-SA shall be permitted only on roads and trails, as identified in the San Rafael Route Designation Plan, as amended.
GRAZING	Where the BLM currently permits livestock grazing in the SRS-SA, such grazing would be allowed to continue subject to applicable laws, regulations, and executive orders. (Specific livestock management decisions would be the same as considered and analyzed in Alternative D)
VISITOR SERVICE FACILITIES	The BLM would be authorized to establish, in cooperation with other public or private entities as the BLM may deem appropriate, visitor service facilities for the purpose of providing information about the historical, cultural, ecological, scientific, recreational, and other resources of the SRS-SA. (Same as outlined in Alternative D)
ROAD MAINTENANCE	Within the SRS-SA, roads would be maintained by the BLM, State of Utah, and Emery County as established through appropriate agreements.
WITHDRAWAL	Subject to valid existing rights, all Federal lands within the SRS-SA, and all lands and interests therein which would be acquired by the United States, would be recommended for withdrawal from all forms of entry, appropriation, or disposal under the public land laws, from location, entry, and patent under the mining laws, from operation of the mineral leasing and geothermal leasing laws and from the minerals materials laws and all amendments thereto.
WILDERNESS STUDY AREAS	Wilderness Study Areas designated Wilderness by this or subsequent acts of Congress would be managed pursuant to the Wilderness Act, legislation designating the area(s) Wilderness, BLM regulation and policy, and the wilderness management plan(s) developed for the area(s). Wilderness Study Areas released from wilderness consideration by this or subsequent acts of Congress would be managed according to the management prescriptions in any existing ACECs or SRMAs.

HIGH USE AREAS	HIGH USE AREAS would be established to facilitate the provision of recreation amenities. High use zones are identified on Map 2-25 in this volume. The following areas would be operated and maintained as high use zones: • Temple Mountain/Little Wild Horse/Behind the Reef • Buckhorn/The Wedge/Mexican Mountain • Head of Sinbad/Swaseys Cabin/Sids Mountain WSA and OHV Trails
LARGE GROUP AREAS	LARGE GROUP AREAS would be designated and developed and made available for public use. Large groups (greater than 15 people) using these sites would be required to obtain a Recreation Use Permit and reservation as necessary for use of the sites. Large group areas are identified on Map 2-26 of this volume. The Large Group Areas would include: • Temple Mountain • Hidden Splendor • Buckmaster Draw (near I-70/SR-24) • South Salt Wash (I-70 Exit 105) • Juniper (near exit 129) • Staker Spring Area • Others as necessary to meet recreation demand and protect resources
ACTIVITY LEVEL PLAN ***A FACA authorized Advisory Committee would play a key role in the completion of the Activity Plans.***	SRS-SA activity plans and/or field office activity plans that include the SRS-SA would be completed in coordination with cooperating agencies subject to available funding. The SRS-SA activity plans could address management of: • Firewood gathering • Vehicle Camping • Pack stock use • Human waste management • Group use permits (SRP Systems) • Facility development • Site and/or area designations • Interpretive plans • Law enforcement • Staffing • Gateway community interface • Organized and/or competitive event management • Visitor services • Habitat Management Plan and Habitat Conservation Plans • Cultural resource protection • Paleontological resource protection • Scientific uses • Fire management • Horse and Burro management • Forest and Woodland management • Threatened and Endangered Species recovery plans
VISUAL RESOURCE MANAGEMENT	The SRS-SA would be managed as VRM – Class II, with the exception of areas within the SRS-SA that also are within WSA (or Wilderness) boundaries, which will be managed as VRM- Class I.

LANDS & REALTY	Retain public lands and obtain land tenure adjustments to consolidate BLM administered lands within the SRS-SA, enhancing manageability of the resources. BLM would pursue acquisition either through sale or exchange, of private and state holdings within the SRS-SA, through negotiation with willing sellers.
RIGHTS-OF-WAY	The SRS-SA would be an avoidance area for rights-of-way development. Right-of-way development would only be allowed if consistent with management purposes.
SCIENCE AND RESEARCH	Scientific research would be encouraged within the SRS-SA. Research projects would be permitted and coordinated through the BLM, and research data collected would be required to be shared with the BLM and the public, as appropriate.
HUNTING AND FISHING	Nothing in SRS-SA management prescriptions shall be deemed to diminish the jurisdiction of the State of Utah with respect to fish and wildlife management, including regulation of hunting and fishing, on public lands within the SRS-SA.
DISPERSED CAMPING	Dispersed camping areas would be identified and designated throughout the SRS-SA, consistent with the San Rafael Route Designation Plan, as amended. Unmanaged/unregulated dispersed camping in the SRS-SA would be allowed in designated areas. If impacts from dispersed camping are found to degrade the environmental conditions, parts or all of the SRS-SA may be closed to unmanaged/unregulated dispersed camping.
WATER RIGHTS	Valid and existing water rights would be maintained. Management of water rights would continue under the authority of the Utah Division of Water Rights.
CULTURAL RESOURCES	Cultural resources within the SRS-SA would be inventoried and classified according to BLM guidelines. Active promotion of identification and interpretation, where appropriate would be implemented following development of a SRS-SA Cultural Resource Management Plan.
Wildlife Soil Vegetation Paleontology Wild Horses & Burros Fire Forestry Riparian Air Special Status Species Abandoned Mine Lands	Management prescriptions for these resources will be as presented in from the Preferred Alternative, as presented in the DEIS/RMP.

APPENDIX 3

Wild and Scenic Rivers Study Process

I. Introduction

The Wild and Scenic Rivers Act (October 2, 1968, Public Law 90-542) establishes the National Wild and Scenic Rivers System (NWSRS), designed to preserve free-flowing rivers with outstandingly remarkable values in their natural condition for the benefit of present and future generations, balancing the nation's water resource development policies with river conservation and recreation goals.

The Act states, "In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas…" [Section 5(d) (1)]. Federal agencies consider potential rivers by evaluating a river's eligibility, tentative classification, and suitability for designation under the Act. This study process is part the resource management planning effort for the Price Field Office.

Eligibility and tentative classification consist of an inventory of existing conditions. Eligibility is an evaluation of whether a river or river segment is free-flowing and possesses one or more outstandingly remarkable values (ORVs). If found eligible, a river is analyzed as to its current level of development (water resources projects, shoreline development, and accessibility) and segmented accordingly. Each river segment is given one of three tentative classifications -wild, scenic or recreational- based on the degree of development. The final procedural step, suitability, provides the basis for determining whether to recommend a river as part of the National System.

On December 13, 1994, an Interagency Agreement was signed by the Bureau of Land Management (Utah State Office), the USDA Forest Service (Intermountain Region), and the National Park Service (Rocky Mountain Region). The agreement calls for the three agencies to "work cooperatively to define common criteria and processes for use in determining the eligibility and suitability of Utah rivers for potential inclusion by Congress in the [national system of Wild and Scenic Rivers]." The product of this agreement is the "Wild and Scenic River Review in the State of Utah: Process and Criteria for Interagency Use" guidance published in June of 1996. This publication suppliments the Act by providing clear, specific criteria for identifying eligible rivers.

Guidance used for this study is also contained in "Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, and Management, Bureau of Land Management Manual – 8351." In addition, various technical papers published by the Interagency Wild and Scenic Rivers Coordination Council relating to the evaluation of rivers were used. These publications may be found at www.nps.gov/rivers/publications.html.

II. Eligibility and Tentative Classification

Eligibility Determination Considerations

In order for a river to be eligible for inclusion into the national system of rivers the Wild and Scenic Rivers Act specifies that the below criteria be met.

These criteria not only apply to each potentially eligible river but also to their immediate environment, which is defined as a river corridor extending ¼ from both sides of the high water mark. For purposes of the eligibility inventory, attention was not given to land ownership other than to ensure that at least some portion of a river segment crosses federal lands administered by the Price Field Office. The status of land ownership, however, is evaluated as a consideration in the suitability step of the study process and is presented in detail in Section III of this appendix.

Free-Flowing Character
To be considered a free-flowing river, it must be a flowing body of water, or estuary, or section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes [Section 16 (a)]. A river can be any size or length, and does not have to be floatable or boatable. For purposes of eligibility determination, a river's flow is sufficient as long as it sustains or complements the outstandingly remarkable value for which the river is be eligible. The body of water must be existing or flowing in a natural condition without major modification of the waterway such as channelization, impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. However, some minor modifications can be allowed such as low dams, diversion works, and minor structures [Section 16 (b)]. The river can lie between impoundments or major dams.

Outstandingly Remarkable Values
The Act specifies that rivers "with their immediate environment, must possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value" [Section 1 (b)].

The "Process and Criteria for Interagency Use" further describes values and characteristics of each that are used to determine which values are outstandingly remarkable and at least regionally significant. The following is a summary of each value:

Scenic: Diversity of view, special features, seasonal variations, and cultural

Recreation: Diversity of use, experience quality, length of season, access, level of use, attraction, sites and facilities, and associated opportunities

Geologic: Feature abundance, diversity of features, educational /scientific importance

Fish: Habitat quality, diversity of species, values of species, abundance of fish, natural reproduction, size and vigor of fish, quality of experience, cultural/historic importance, recreational importance, access

Wildlife: Habitat quality, diversity of species, abundance of species, natural reproduction, size and vigor of fish, quality of experience, cultural/historic importance, recreational importance, access

Historic: Significance, site integrity, education/interpretation, and listing in or eligibility for National Register of Historic Places

Cultural: Significance, current uses, number of cultures, site integrity, education/interpretation, and listing in or eligibility for National Register of Historic Places

Ecological: Species diversity, ecological function, rare communities, and educational/scientific

These values must be regionally significant at minimum. Therefore, a region of comparison was used to guide the evaluation of a value's significance. For this study, the Tavaputs Plateau, Northern Canyonlands, and Utah High Plateaus and Mountains ecological sections were used (Clealand et al. 1997, Summary National Hierarchical Framework of Terrestrial Ecological Units: ECOMAP, USDA Forest Service, Washington, D.C.). These ecological sections delineate distinct parameters in major ecological systems as defined by geology, topography, climate, etc. and are typically the most visible features of the landscape.

Tentative Classification

Eligible rivers are given a tentative classification. The Wild and Scenic Act provides for three possible classifications: wild, scenic, or recreational. These classifications are based on the type and degree of human development associated with the river and adjacent lands present at the time of inventory. They also prescribe what management activities would be allowed to occur along a river, as long as no outstandingly remarkable value is compromised.

The wild classification, the most restrictive of management activities, is given rivers free of impoundments and those generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

The scenic classification is given rivers that are generally free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads.

The recreational classification, the least restrictive, is given rivers readily accessible by road or railroad, may have some development along their shorelines, and may have substantial evidence of human activity.

Final classification of a river segment is determined if and when a river is designated into the national system.

Eligibility Determinations Process

Coordination

In November 1997, a Memorandum of Understanding (MOU) was signed between the State of Utah and the BLM by former Governor, Mike Leavitt, and former BLM State Director, William Lamb, to establish a cooperative effort for Wild and Scenic River study processes for BLM field offices in Utah. Emery County had previously established a cooperative agreement with the BLM for land use planning in a MOU signed April 29, 1996. Likewise, Carbon County agreed to cooperate in a similar MOU signed August 26, 2003. These agreements enabled the BLM to extend an interdisciplinary team of specialists, formed for this study process, to include representatives from these governments. Table X.2 lists all interdisciplinary and other meetings held during the eligibility step of the study process.

Table 1: Eligibility Study Meetings*

Date	Purpose	Attendees	
August 28, 2002	Eligibility Collaboration Initiation Meeting	Ann King (USFS) Bill Howell (Southeast Utah Assoc. of Govts.) Bill Redd (San Juan Co.) Brad Higdon (BLM) Craig Johansen (Emery Co.) Darrel Leamaster (Emery Co.) Dave Levanger (Carbon Co.) Dennis Willis (BLM) Drew Sitterud (Emery Co.) Ed Bonner (SITLA) Floyd Johnson (BLM) Garth Heaton (USFS) Jay Humphrey (Emery Co.) Will Stokes (SITLA)	Kathleen Truman (Emery Co.) Kort Utley (Governor's Office of Budget and Planning) Louis Berg (UDWR) Marilyn Peterson (BLM) Mark Page U. Div. Water Rights) Mesia Nyman (USFS) Mike Hubbard (USFS) Ray Peterson (Emery Co.) Rex Sacco (Carbon Co.) Ruth McCoard (BLM) Val Payne (UDNR) Justin Seastrand (BLM)
October 3, 2002	Interdisciplinary Team Eligibility Review	Brad Higdon (BLM) Rex Sacco (Carbon Co.) Ken Davey (Grand Co.) Jay Humphrey (Emery Co.) Lee McEprang (Emery Co.) Darrel Leamaster (Emery Co.) Morris Sorensen (Emery Co.) Craig Johansen (Emery Co.) Val Payne (UDNR) Ann King (USFS) Drew Sitterud (Emery Co.)	Roger Barton (Carbon Co.) Blaine Miller (BLM) Jack Wood (BLM) Tammy Tucker (BLM) Justin Seastrand (BLM) Tim Finger (BLM) Kerry Flood (BLM) Mike Leschin (BLM) Marilyn Peterson (BLM) Ray Jenson (BLM) Wayne Ludington (BLM)

October 16, 2002	Interdisciplinary Team Eligibility Review	Brad Higdon (BLM) Floyd Johnson (BLM) Dave Levanger (Carbon Co.) Gayla Williams (Carbon Co.) Rex Sacco (Carbon Co.) Jay Humphreys (Emery Co.) Morris Sorensen (Emery Co.) Craig Johansen (Emery Co.)	Mike Leschin (BLM) Wayne Ludington (BLM) Roger Barton (Carbon Co.) Amy Adams (BLM) Kerry Flood (BLM) Chris Colt (UDWR) Tom Gnojek (BLM) Blaine Miller (BLM)
October 30, 2002	Interdisciplinary Team Eligibility Review	Floyd Johnson (BLM) Brad Higdon (BLM) Roger Barton (Carbon Co.) Kerry Flood (BLM) Val Payne (UDNR) Jay Humphrey (Emery Co.) Craig Johansen (Emery Co.) Gayla Williams (Carbon Co.)	Rex Sacco (Carbon Co.) Dave Levanger (Carbon Co.) Morris Sorensen (Emery Co.) Darrel Leamaster (Emery Co.) Lee McEprang (Emery Co.) Louis Berg (UDWR) Drew Sitterud (Emery Co.)

∗Does not include Price Field Office internal interdisciplinary team meetings, agency and interagency coordination meetings, or meetings with Tribes.

Rivers considered

All rivers identified on a 1:100,000 scale map of the planning area were considered for potential eligibility). From these, focus was narrowed by the interdisciplinary team to rivers identified as potentially eligible. In addition, several sources provided lists of potentially eligible rivers. Table 2 is a list of all rivers specifically identified for consideration from their various sources.

TABLE 2 • Documentation of Eligibility: Free-Flowing Rivers Considered

River Name	Source for Consideration*	Segment Description
Barrier Creek	a, b, d	Canyonlands National Park boundary to mouth at Green River
Bear Canyon Creek	e	Headwater to mouth at Rock Creek
Buckhorn Wash	e	Road crossing at Buckhorn Flat to mouth at San Rafael River
Buckskin Canyon Creek	e	Headwaters to mouth at Rock Creek
Cane Wash	b, d, e	Head of wash to mouth at San Rafael River
Chimney Canyon	e	Head of canyon to mouth at Muddy Creek
Coal Creek	e	Length of reach
Coal Wash	e	Confluence of North and South Forks of Coal Wash to mouth at North Salt Wash
Cottonwood Canyon	e	Head of canyon to mouth at Nine Mile Creek
Cottonwood Wash	b, d, e	Head of wash to county road where wash exits reef
Desert Seep Wash	d	Desert Lake WMA to mouth at Price River
Devils Canyon	b, d, e	Road crossing to mouth at South Salt Wash
Dry Canyon	e	Head of Canyon to mouth at Nine Mile Creek
Dugout Creek	e	Length of reach
Eagle Canyon	b, d, e	Springs at head of canyon to Secret Mesa road crossing
		Secret Mesa road crossing to confluence with North Salt Wash
Fish Creek	e	Scofield Reservoir to confluence with White River

Flat Canyon	d	Headwaters to mouth at Green River
Goodwater Canyon	e	Length of reach
Gordon Creek	d, e	Confluence of Bob Wright and Mud Water Canyons to mouth at Price River
Grassy Trail	d, e	Length of reach
Green River	a, b, d, e	County line near Nine Mile Creek to Chandler Canyon
		Chandler Canyon to Florence Creek
		Florence Creek to Nefertiti boat ramp
		Nefertiti boat ramp to I-70 bridge
		I-70 bridge to mile 91 below Ruby Ranch
		Mile 91 below Ruby Ranch to Hey Joe Canyon
		Hey Joe Canyon to Canyonlands National Park Boundary
Icelander	d	Town of Sunnyside to mouth at Grassy Trail Creek
Iron Wash	d	From spring to mouth at Strait Wash
Ivie Creek	d, e	Highway 10 to mouth at Muddy Creek
Jack Creek	d, e	Headwaters to mouth at Green River
Keg Spring Canyon	e	Head of canyon to mouth at Green River
Last Chance Wash	d	Last Chance Wash Cutoff Road (925) to mouth at Salvation Creek
Lockhart Draw	e	Head of draw to mouth at San Rafael River
McCarty Canyon	b, d	Length of reach
Mesquite Wash	e	Head of wash to mouth at North Salt Wash
Molen Seep Wash	d	Through Molen Reef to mouth at North Salt Wash
Muddy Creek	e	Manti-La Sal National Forest boundary to I-70**
	a, b, d, e	I-70 to Lone Tree Crossing
		Lone Tree Crossing to South Salt Wash
		South Salt Wash to county road downstream of North Caineville Reef
Nates Canyon	e	Length of reach
Nine Mile Creek	d, e	Headwaters to confluence with Minnie Maude Creek
	a, d, e	Confluence with Minnie Maude Creek to Bulls Canyon
		Bulls Canyon to mouth at Green River
North Fork Coal Wash	e	Head of wash to Fix It Pass route
		Fix It Pass route to confluence with South Fork Coal Wash
North Salt Wash	b, d, e	Confluence with Horn Silver Gulch to mouth at San Rafael River
Oil Well Draw	e	Length of reach
Pace Creek	e	Length of reach
Price River	e	Confluence of Fish Creek and White River to Price City water treatment plant
		Price City water treatment plant to Poplar Street bridge in Helper
		Poplar Street bridge in Helper to Mounds bridge
	a, e	Mounds bridge to Book Cliffs escarpment
	a, b, d, e	Book Cliffs escarpment to mouth at Green River
Quitchupah Creek	d, e	Manti-La Sal National Forest boundary to mouth at Ivie Creek
Range Creek	a, b, d, e	Headwaters to Trail Canyon
		Trail Canyon to drill holes below Turtle Canyon
		Drill holes below Turtle Canyon to mouth at Green River
Red Canyon	e	Length of reach

Rock Creek	d, e	North Fork headwaters to mouth at Green River
	d	Length of South Fork
Saddle Horse Canyon	b, d	Length of reach
Salt Wash	d	Headwaters to mouth at Muddy Creek
Salvation Creek	d	Headwaters to mouth at Muddy Creek
San Rafael River	a, b, d, e	Confluence of Ferron and Cottonwood Creeks to Fuller Bottom
		Fuller Bottom to Johansen corral
		Johansen corral to Lockhart Wash
		Lockhart Wash to Tidwell Bottom
		Tidwell Bottom to mouth at Green River
Soldier Creek	e	Length of reach
South Fork Coal Wash	e	Head of wash to Eva Conover route
		Eva Conover route to confluence with North Fork Coal Wash
South Salt Wash	e	Length of reach
Spring Canyon	e	Length of reach
Three Canyon (Carbon County)	d	Headwaters to mouth at Green River
Three Canyon (Emery County)	e	Length of reach
Trail Canyon	d	Headwaters to mouth at Green River
Two Mile Canyon	e	Length of reach
Virgin Springs Canyon	e	Length of reach
Willow Creek	e	Length of reach

* The below key indicates the Source for Consideration:

a - Nationwide Rivers Inventory List
b - American Rivers Outstanding Rivers List
c - 1970 USDA / USDI List
d - Utah Rivers Council / SUWA List
e - Identified by Federal Agencies, State, Tribal, or other governments
f - Identified during public scoping of RMP

** River segment determined not to be free-flowing due to presence of impoundments and dropped from further consideration

Identification of Outstandingly Remarkable Values

The interdisciplinary team reviewed all potentially eligible rivers to determine which possess outstandingly remarkable values. Table 3 identifies and describes these values for each river.

TABLE 3 • Documentation of Eligibility: Outstandingly Remarkable Values of Eligible Rivers

RIVER NAME	DESCRIPTION OF VALUES PRESENT
Barrier Creek	**Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Rock art panels in the adjacent Horseshoe Canyon Unit of Canyonlands Nation Park are the type-site for Barrier Canyon rock art styles. Other rock art sites continue down stream to the confluence with the Green River. Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Recreation** The most well known features of Barrier Creek are in the Canyonlands National Park extension. This is a popular destination for visitors willing to hike two miles and 800 vertical feet to visit the Great Gallery pictographs. This canyon has cultural sites throughout its length and provides great opportunity to view these sites. Barrier Creek is also a popular side canyon hike for people traveling through Labyrinth Canyon. They are rewarded for their efforts with a clean water stream with wetlands and cottonwoods. There are many technical climbing routes in this canyon including the spectacular Tyrolean traverse and free rappel featured in the first Eco-Challenge. **Ecological** This isolated segment is undisturbed except by foot travel. As a natural preserve, it provides an excellent example of a desert riparian, vegetative community. The water table underlying the San Rafael Desert seeps at hanging gardens along the canyon walls that enclose the rich, verdant riparian.

Bear Canyon Creek	**Fish** The habitat quality in Bear Canyon Creek for fish is high. The introduction of native Colorado River cutthroat trout, a rare species (listed as sensitive by the BLM and State of Utah), has been approved by the RDCC and is expected to be implemented in the reasonably foreseeable future. The value of the current species is moderate but will become high due to the uniqueness of Colorado River Cutthroat Trout. Fish are abundant below waterfalls but are currently absent above waterfalls where they will be introduced. The natural reproduction of fish is high in the portion of the stream where fish are present and is expected to be high where fish will be introduced. The size of trout ranges up to 20 inches. The quality of the fishing experience is high due to the scenic and pristine nature of the stream and canyon (there is a beautiful waterfall about 1 mile above the confluence with Rock Creek). Bear Canyon Creek receives low recreational use, but could be important to anglers wanting a remote fishing experience.
Buckhorn Wash	**Historic** Values consist of sites associated with farming/ranching, transportation and Civilian Conservation Corps and are important for interpreting these events. They retain original character. Many sites are eligible for the National Register of Historic Places. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites retain integrity. They are important for interpreting regional prehistory. The Buckhorn Rock Art Site is already listed on the National Register of Historic Places. Many other sites are eligible for the National Register.
	Recreation The recreation opportunity here is "Roaded Natural" in the ROS. A drive through with a few stops gives the visitor a great sampling of the splendors of canyon country in general and the San Rafael Swell in particular. In addition to a dramatic canyon, the recreation user has the opportunity to visit dinosaur tracks and bones, prehistoric sites representing 8,000 years of cultures as well as cold war relics in the form of the Morrison Knudson tunnels and uranium exploration. It has the great variety of attraction sites in such a short canyon that makes the recreation opportunity outstandingly remarkable. In addition to the "windshield tourism" opportunity, there are several technical climbing routes in the canyon. **Scenic** The visual experience of entering Buckhorn Wash is particularly dramatic. The distant horizon is almost immediately replaced by topographic grandeur. The canyon provides beautiful displays of geologic layers, sequentially exposed, rise to towering benches, varnished walls, high pour-offs, and deep alcoves. A rincon remains as an isolated pinnacle. A verdant riparian zone marking the canyon bottom provides a nice contrast to the stark desert scene. **Wildlife** The wash provides excellent habitat for desert bighorn sheep, mule deer and numerous migratory birds. The wash, lined with riparian vegetation, provides water and forage for these species. The wash is considered a good choice for observing the desert bighorn sheep as they graze along the wash bottom, scree slopes, and cliffs on either side of the wash.

Buckskin Canyon Creek	**Fish** Habitat quality for fish is high. Introduction of native Colorado River cutthroat trout, a rare species (listed as sensitive by the BLM and State of Utah), has been approved by the RDCC and is expected to be implemented in the reasonably foreseeable future. The value of the current species is moderate but will become high due to the uniqueness of Colorado River Cutthroat Trout. Fish are abundant below waterfalls but are currently absent above waterfalls where they will be introduced. The natural reproduction of fish is high in the portion of the stream where fish are present and is expected to be high where fish will be introduced. The size of trout probably ranges up to 20 inches. The quality of the fishing experience is high due to the scenic and pristine nature of the stream and canyon (there is a beautiful, high waterfall about 2 miles above the confluence with Rock Creek). Buckskin Canyon Creek receives low recreational use but could be important to anglers wanting a remote fishing experience.
Cane Wash	**Cultural** This wash has an outstanding example of Barrier Canyon rock art. Other features are unknown but likely present. The rock art site is eligible for listing on the National Register. **Recreation** This wash is a popular hike and horseback ride from the San Rafael Bridge Recreation Site or as an alternate route to the Little Grand Canyon of the San Rafael River. This wash also provides for recreational petrified wood collection. **Scenic** A huge fin of the Wingate Formation is located in the lower portion of the wash and was formed by erosion on the one side by Cane Wash and the other by the San Rafael River. High on this fin is a window in the rock, which is visible from the Wedge Overlook. Much of the wash is incised within the surrounding stone, or is bordered by high cliffs and alcoves.
Chimney Canyon	No regionally significant outstandingly remarkable values identified
Coal Creek	No regionally significant outstandingly remarkable values identified

Coal Wash	**Historic** Values consist of sites associated with ranching and mining, which are important for interpreting these events. They retain original character. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** Large sand dunes climb high on the Navajo sandstone escarpments that narrowly enclose the meandering wash bottom. **Recreation** Coal Wash is a popular destination for hikers, and horseback riders due to rich scenic, wildlife, and cultural features.
Cottonwood Canyon	No regionally significant outstandingly remarkable values identified
Cottonwood Wash	**Cultural** This area has evidence of significant occupation and use by prehistoric peoples (mainly rock art), representing more than one cultural period (Archaic, Fremont and Numic). Some features are significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** Cottonwood Wash is an incised bifurcated canyon, with intermittent live water and cottonwood trees, cutting through eastern side of northern San Rafael Reef.
Desert Seep Wash	No regionally significant outstandingly remarkable values identified
Devils Canyon	**Wildlife** This narrow canyon and surrounding slick rock topography provides excellent habitat for desert bighorn sheep. **Recreation** This canyon provides an easily accessible, primitive opportunity to hike through one of the premiere slot canyon narrows in the San Rafael Swell. **Scenic** Ponderosa Pines provide contrast against sandstone domes textured by the cross bedding of petrified dunes. The domes drain into beautifully sculpted, slot canyon narrows.
Dry Canyon	Identified cultural and scenic values, but determined not regionally significant
Dugout Creek	No regionally significant outstandingly remarkable values identified

Eagle Canyon	**Scenic** Dark pockets of Ponderosa pine provide contrast to the soft tones of the sandstone walls. Eagle Canyon Arch highlights the upper portion of the canyon, which opens to a picturesque serpentine valley of sandstone domes, slickrock and vegetated sand dunes. Narrow side drainages are also studded with Ponderosa Pine. Below a huge, dramatic pour off the canyon narrows to a meandering slot, exposing beautiful patterns of sandstone cross bedding.
Fish Creek	**Fish** This segment is a high quality cold-water fishery. Designated a Blue Ribbon Fishery, this segment has substantial regulatory protection under Utah Division of Wildlife Resources proclamation rules and agreements. Releases from Scofield Reservoir are arranged to sustain the fishery and instream flow rights are under consideration.
Flat Canyon	No regionally significant outstandingly remarkable values identified
Goodwater Canyon	No regionally significant outstandingly remarkable values identified
Gordon Creek	**Historic** Gordon Creek (original known as Garden Creek) is the location of the first historic era settlement in Carbon County. One ranch site is associated with one of the three original settlers. Values include sites associated with community development and decline, farming/ranching, communication, transportation, irrigation and Civilian Conservation Corps. They retain original character. It is eligible for nomination to the National Register of Historic Places as a district for both its historic and prehistoric values. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. Because of the short period of historic occupation, the sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory and comparing prehistoric and historic agricultural settlement patterns of the same area.
Grassy Trail	Contains unique geologic feature, but determined not regionally significant

Green River / Tavaputs Plateau (Desolation Canyon)	**Cultural** This area has evidence of significant occupation and use by prehistoric peoples. It includes rock art and other features that remain significant to some Native American populations today. It also includes some of area of study used by Noel Morss in defining of the Fremont Culture. The prehistoric use represents more than one cultural period (Archaic, Fremont and Numic). The sites have been largely isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. Flat Canyon Archaeological District, within Desolation Canyon, is listed on this register. **Historic** Much of this river corridor is a National Historic Landmark because of its recognition as the least changed of the river corridors associated with John Wesley Powell and the exploration of the Green and Colorado Rivers. Other historic values are associated with settlement, farming/ranching, mining, Prohibition, recreational river running, waterworks and reclamation. Sites have been largely isolated and therefore retain their original character. **Recreation** A trip though Desolation and Gray Canyons of the Green River, consecutive canyons within the Tavaputs Plateau, is a premier, wilderness recreation experience. The 84-mile trip from Sand Wash to Swasey's Beach is world renown. Located in Utah's deepest canyon and largest WSA, Desolation and Gray Canyons offer outstanding white water boating with approximately 60 rapids and riffles. There is also ample opportunity for land-based activity like hiking in the more than 60 side canyons. The BLM receives over 3,000 applications per year for the 450 available trip permits issued to self-outfitted users. Eighteen commercial outfitters market trips through these canyons both nationally and internationally. **Scenic** At over one mile deep Desolation Canyon is Utah's deepest canyon, cutting through the youngest exposed strata on the Colorado Plateau. Desolation and Gray Canyons consist of complexes of many canyons draining to the Green River. Outstanding scenic values are dictated primarily by the domination of geologic features. In addition to canyon walls rising thousands of feet, there are also many interesting rock formations such as arches and hoodoos. Though the landscape is mostly dry and austere, pleasing contrasts are found in the green ribbon of life along the river, as well as the hanging gardens and pockets of huge fir trees scattered within the cliffs.
	Geology An outstanding example of an antecedent river cutting through structural geology that should have been impassable to it. As the land surface rises towards the south, the Green River continues to flow to the south and hence decrease in elevation despite the trend of the surrounding landscape. This results in the deepest canyon in Utah, Desolation Canyon. The corridor of the Green in this stretch also provides the regions best examples of reattachment bars and separation bars formed by the processes of fluvial geomorphology in bedrock canyons.

	Fish This portion of the Green River provides habitat for four Federally listed fish species: Pike Minnow, Humpback Chub, Bonytail Chub, and Razorback Sucker. Of notable significance, this river contains designated critical habitat for the pike minnow. Spawning areas for this species have been confirmed within this river, which is also considered important for young of the year pike minnows. Know populations of Humpback Chub and Razorback Sucker have been confirmed within this river, while Bonytail Chubs are suspected to occur. This river is considered regionally important for the recovery of these four Federally listed species. **Wildlife** This portion of the Green River is considered to have remarkable value for both avian and terrestrial wildlife populations. With regard to avian species, this river corridor is regionally significant, both for its diversity of avian species and for supporting habitats for Federally listed and BLM sensitive avian species. Confirmed Federally listed species present include Bald Eagle, Mexican Spotted Owl and Southwestern Willow Flycatcher. BLM sensitive species known to occur include Peregrine Falcon, Yellowbreasted Chat, Yellowbilled Cooko. The river corridor is presently used by Bald Eagles during the winter, but is also considered potential nesting habitat. Mexican Spotted Owls have been verified nesting within this river corridor. The corridor, designated critical habitat for Mexican Spotted Owls, is believed to be significant for their expansion. The Green River segment is also important for bighorn sheep, mule deer and elk. The entire corridor is regionally significant as lambing habitat for the Rocky Mountain bighorn and considered important winter range for mule deer and elk. **Ecological** The Green River hosts a variety of avian, terrestrial, and aquatic species populations. The river and its properly functioning riparian area provide a corridor of habitat through an otherwise arid region for many sensitive and Federally listed species of birds and fish, as well as populations of bighorn sheep, deer, elk, black bear, mountain lion, and beaver. The corridor supports rare plant species including a recently discovered specie of columbine. The stability of this ecosystem, largely unchanged from the passage of John Wesley Powell, contributed to the designation of Desolation Canyon National Historic Landmark.

Green River / Labyrinth Canyon	**Cultural** This area has evidence of significant occupation and use by prehistoric peoples and includes some of the area of study used by Noel Morss in definition of the Fremont Culture. Its rock art and other features remain significant to some Native American populations today. The prehistoric use represent more than one cultural period (Archaic, Fremont and Numic). The sites have been largely isolated and retain integrity and are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Recreation** Labyrinth Canyon of the Green River is approximately 68 miles in length. The character of this canyon is completely different from Desolation Canyon. This stretch of river has no rapids, making it an excellent experience for canoe paddlers of all abilities. It provides a four to seven day backcountry paddling experience. There are also great opportunities for dispersed camping and hiking to cultural sites, unique geologic features and other attractions. Approximately 7,000 people per year enjoy this popular trip. The section is also suitable for powerboat use at some water levels and provides for much of the annual Friendship Cruise route, a decades-long running powerboat event. This section of the Green River has been widely reported on in the popular press in newspapers from coast to coast as well as in specialty publications such as Paddler Magazine. **Scenic** Scenic values are largely a product of the geology. The Green River meanders through a deeply incised canyon. Explored John Wesley Powell named the canyon for its many intricate twists and turns. At Bowknot Bend, one travels a distance of seven river miles to end up within a quarter mile of start. Varnished cliffs are cut in places by the narrow mouths of shaded side canyons where mature cottonwood trees are harbored. In the lower parts of the canyon, vertical cliffs of Windgate sandstone raise 1,000 feet above the river. **Fish** This portion of the Green River provides habitat for four endangered fish, including spawning habitat for the Colorado Pikeminnow (squawfish). The river contains critical habitat as designated by US Fish and Wildlife Service for these species. **Paleontology** Dinosaur bones visible in Morrison Formation outcrop have been reported by reliable sources (Dr. Paul Bybee, geology professor at Utah Valley State College in Orem, UT). They are reported visible from the river. **Historic**
Icelander Creek	No regionally significant outstandingly remarkable values identified
Iron Wash	No regionally significant outstandingly remarkable values identified
Ivie Creek	No regionally significant outstandingly remarkable values identified
Jack Creek	No regionally significant outstandingly remarkable values identified

Keg Spring Canyon	**Cultural** This area has evidence of significant occupation and use by prehistoric peoples, including probably the most scientifically important site in the area. The prehistoric use represents more that one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** This canyon is beautifully walled with live water, cottonwood trees and riparian vegetation. Alcoves and caves are found throughout its length. **Recreation** This canyon is less visited with access for hikers primarily from Labyrinth Canyon of the Green River and some from Antelope Valley Road. This canyon provides an excellent opportunity to experience solitude in an area rich in scenic quality.
Last Chance	No regionally significant outstandingly remarkable values identified
Lockhart Draw	No regionally significant outstandingly remarkable values identified
McCarty Canyon	Large presence of Bighorn sheep not supported by waterway and, therefore, not river related
Mesquite Canyon	**Wildlife** The canyon provides excellent habitat for desert bighorn sheep and small mammals. The canyon with cliffs and slick rock provide exemplary escape cover and forage for the sheep as is evident by the number of sheep present in the Canyon. **Scenic** The narrow canyon alternates between towering walls and slick rock domes that provide outstanding scenes. Side canyons have patches of Ponderosa Pine and juniper providing wonderful contrast in pattern and color.
Molen Seep Wash	No regionally significant outstandingly remarkable values identified

Muddy River	**Historic** Values consist of sites associated with uranium exploration and mining and are important for interpreting these events. They retain original character. Many sites are eligible for the National Register of Historic Places. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. It includes some of the area of study used by Noel Morss in definition of the Fremont Culture. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Recreation** The Muddy offers mostly a primitive and semi-primitive recreation opportunity. When water flows are adequate the Muddy provides a challenging white water experience. During low flows, it provides hikers an opportunity to traverse through the heart of the San Rafael Swell. The Chute, a deep, narrow slot through which the Muddy River flows, is one of the most popular floating and hiking routes in the San Rafael Swell. This area is well known and draws visitors from throughout the nation. **Scenic** This segment traverses a variety of geologic strata providing nice variety in landform and color. Dramatic cliffs raising hundreds of feet dominate the view. These are decorated with interesting rock formations such as pinnacles, arches, and hoodoos. The Chute of the Muddy River provides exceptional slot canyon scenes with the river meandering from wall to wall.
Nates Canyon	No regionally significant outstandingly remarkable values identified

Nine Mile Creek	**Historic** Nine Mile Creek provides one of the best examples of Non-City of Zion settlement, an unusual pattern in Utah. Values included sites associated with community development and decline, fur trade and exploration, farming/ranching, military history, communication, transportation, irrigation and Civilian Conservation Corps., which retain original character and are important for interpreting these events. It is currently being nominated to the National Register of Historic Places for both its historic and prehistoric values. **Cultural** Nine Mile Canyon has the greatest concentration of prehistoric rock art in the world. It also has some of the most visible and best preserved remains of the Fremont Culture. It is part of the study area Noel Morss used in defining that Culture. Rock art and other features remain significant to some Native American populations today. The prehistoric use represents more than one cultural period (Archaic, Fremont and Numic). The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Nine Mile Canyon is eligible for the National Register and is currently being nominated for this special designation. **Scenic** Nine Mile Canyon was dedicated as a Backcountry Byway in 1990. The main visual features are the dramatic topography of high canyon walls, dissected by steep side canyons and punctuated with isolated buttes, mesas and outcrops. A lush riparian zone of willow and cottonwood marks the canyon bottom. A series of farms and ranches provide a rural appearance to an otherwise very wild looking landscape. Prehistoric rock art adorn the canyon walls adding intrinsic interest to foreground views. Water features include the flowing stream and beaver ponds.
North Coal Wash	**Historic** Values consist of sites associated with ranching and mining, which are important for interpreting these events. They retain original character. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** A sandstone landscape of domes, pinnacles, alcoves, and extended cliff lines drop into the incised canyon bottom. Groves of pinion and juniper opening to grassy parks are terraced over the cottonwood lined canyon bottom. The enormous reach of Slipper Arch provides a premier scenic feature. **Recreation** Coal Wash is a popular destination for OHV users, hikers, and horseback riders due to rich scenic, wildlife, and cultural features.
Oil Well Draw	No regionally significant outstandingly remarkable values identified
Pace Creek	No regionally significant outstandingly remarkable values identified

Price River	**Historic** Historic values are associated with settlement, farming and ranching, and transportation (early railroads), which are important for interpreting these events. Most sites have been somewhat isolated and therefore retain their original character. Many sites are eligible for the National Register of Historic Places. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Fish** From the confluence of Lower Fish Creek and White River downstream through Helper, this river provides a potentially high quality cold-water fishery. Currently, a plan (in conjunction with a Total Maximum Daily Load) to improve the fishery and correct temperature discrepancies that exist in part of the reach is underway. The river is stocked with trout annually as far downstream as the Helper gauging station. In the last decade habitat improvement projects such as the construction of stone pool forming structures have been completed along the Helper parkway by UDWR with the support of Trout Unlimited. UDWR has also spent effort and money on improvements to direct access to the river along Hwy 6, which provides access along most of this reach, to enhance opportunities to fish. In addition, the White River watershed is currently undergoing restoration partly for the purpose of improving the fishery below its confluence with the Price River. The lower Price River segment is considered to be important for several Federally listed fish species. The mouth of this river segment is important habitat for young of the year pike minnow. Bonytail Chub and Razorback Sucker may also use this river segment. **Wildlife** The lower Price River is important to numerous avian wildlife species, notably the Mexican Spotted Owl, Peregrine Falcon, and Southwestern Willow Flycatcher. The river segment provides excellent nesting roosting habitat for the Mexican Spotted Owl and the Peregrine Falcon, though these species have not been confirmed present to date. The river segment is also important lambing habitat for the Rocky Mountain Bighorn Sheep. **Geology** Exposed in the walls of the lower canyon of the Price River are excellent examples of delta sediments deposited during the Cretaceous period. The repeated retreat and advance of the inland seaway is vividly recorded in the exposures of the Mesa Verde Group. Major oil companies bring geologists on field trips to this escarpment to see and study these exposures.
Quitchupah Creek	Riparian zone supports wildlife and ecological values, however determined not to be regionally significant.

Range Creek	**Historic** Historic values are associated with settlement, farming and ranching and are important for interpreting these events. Sites have been largely isolated and therefore retain their original character. Many sites are eligible for the National Register of Historic Places. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). It includes rock art and other features that remain significant to some Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** Unlike most of the side canyons entering the Green and Colorado Rivers, Range Creek carved a "U" shaped rather than a "V" shaped valley. In this canyon a lush, river bottom land suddenly gives way to dramatic cliffs and mountains that rise 4,000 feet to the top of the Tavaputs Plateau. The canyon passes though several life zones, from high alpine forest and meadows down to a salt shrub desert. The pattern of vegetation habitat types and the way they vary with elevation and slope aspect creates a varied and interesting scene. Dramatic topography and unusual rock formations split by a mountain stream creates a stimulating visual experience. **Wildlife** The Range Creek segment is unique and regionally significant for the diversity of avian and terrestrial wildlife. The upper drainage provides summer range for mule deer and elk while the lower drainage provides winter range for these species. The lower drainage is important lambing habitat for Rocky Mountain Bighorn sheep. The Range Creek drainage is designated critical habitat for the Mexican Spotted Owl, though no occupied territories have yet to be confirmed.
Red Canyon	No regionally significant outstandingly remarkable values identified

Rock Creek	**Historic** Rock Creek provides an excellent example of historic homesteading. The historic architecture and manipulated landscape are well preserved. Many sites are eligible for the National Register of Historic Places. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). It includes rock art and other features that remain significant to some Native American populations today. The sites have been largely isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Recreation** Rock Creek, a much anticipated respite for river travelers, is the most visited area in Desolation Canyon. Visitors are attracted to the cool, clear, refreshing waters meandering through the lush riparian zone in addition to the well preserved historic structures. Rock Creek offers the most popular hike in Desolation Canyon. Hikers enjoy the varied scenery as well the abundant rock art to be seen along the canyon walls. A cold-water fishery rounds out the variety of recreational opportunity to be experienced along Rock Creek. **Scenic** There are over 60 tributary canyons to Desolation and Gray Canyon. Of these, Rock Creek provides the most dramatic and exceptionally high quality scenery. There is tremendous topographic relief as the canyon rises over 5,000 feet from the mouth of the creek to the top of the plateau. The canyon bottom has a verdant riparian zone along a clear, cold water creek. The creek itself has a pool and drop structure, cascading in places, providing intrinsically interesting sights, accented by the sounds of flowing, splashing water. The canyon walls are resplendent. Lower elevation pinyon and juniper give way to Douglas fir at the mid to higher elevations. These stands of dark green timber are punctuated with outcrops and ledges of red sandstone. **Fish** The habitat quality in Rock Creek for fish is high. The introduction of native Colorado River Cutthroat Trout, a rare species (listed as sensitive by the BLM and State of Utah), has been approved by the State's Resource Development Coordinating Committee (RDCC) and is expected to be implemented in the reasonably foreseeable future. The value of the current species is moderate but will become high due to the uniqueness of Colorado River cutthroat trout. Fish are abundant below waterfalls but are currently absent above waterfalls where they will be introduced in 2003. The natural reproduction of fish is high in the portion of the stream where fish are present and is expected to be high where fish will be introduced. The size of trout ranges up to 20 inches or larger. The scenic and pristine nature of the stream and canyon also contribute to the high quality of the fishing experience. The upper reaches of Rock Creek receive low recreational use, but could be important to anglers wanting a remote fishing experience.
Saddle Horse Canyon	Identified to have quality riparian vegetation and scenic values, but not considered regionally significant
Salt Wash	No regionally significant outstandingly remarkable values identified
Salvation Creek	No regionally significant outstandingly remarkable values identified

San Rafael River	**Historic** Values include sites associated with farming/ranching, transportation and Civilian Conservation Corps and are important for interpreting these events. They retain original character. The Swinging Bridge is listed on the National Register of Historic Places. Other sites are eligible for the National Register. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Recreation** This river provides a great variety of recreational experiences. While the recreation opportunity is primitive, the segment through the area known as the Little Grand Canyon of the San Rafael offers a greater variety of experience than any other segment in this field office area. At higher water levels it is floated by a variety of watercraft, from canoes and kayaks to small rafts. In addition to boating, this segment is also traversed by backpackers and equestrians. There are great dispersed campsites and attraction sites throughout this segment. The segment downstream of Swinging Bridge is known as the Black Boxes, named for the Upper and Lower Black Box Canyons of the San Rafael. Here the San Rafael traverses canyons that are hundreds of feet deep and tens of feet wide. At lower water levels, the Black Boxes provide a moderately difficult canyoneering experience. Canyoneers find themselves hiking, climbing and rock scrambling, and swimming on a typical trip. At high water, the canyons are the domains of the high-end expert kayakers. At high flows, these canyons provide one of Utah's most challenging kayak runs. **Scenic** The Little Grand Canyon is named for its grandeur. Here the San Rafael has carved a dramatic canyon of rock with very little vegetation on the canyon walls. The green ribbon of the riparian zone provides respite from the barren canyon. In addition to the geologic scenic features, the canyon provides great wildlife viewing opportunities and numerous cultural sites. Deep, narrow canyon walls dominate the scenery through the Black Boxes. The confined river meandering the few yards from wall to wall is visually unique and outstanding, a slot canyon on a grand scale **Wildlife** The San Rafael River provides habitat for a number of wildlife species including desert bighorn sheep, migratory birds, mule deer, chukar and fish. Portions of this river are important to the desert bighorn sheep and mule deer for water and forage while the riparian vegetation along the river provides important nesting and foraging habitat. Peregrine falcons are known to nest on the high cliffs bordering the river where they can utilize the prey (migratory birds) found here. The San Rafael River provides habitat for a number of fish including the federally endangered Colorado Pikeminnow and state sensitive Roundtail Chub. A portion of this river flows through steep walled canyons that are considered as potential habitat for the endangered Mexican Spotted Owl.

	Geology This is a textbook example of a superimposed stream cutting through an anticline (San Rafael Swell). An excellent example of a rincon is present within the Little Grand Canyon. All along the river, but most especially in the area of the Black Boxes, are wonderful examples of entrenched meanders cut into the underlying bedrock. This segment of the river also contains Swasey's Leap (where the river canyon is so narrow that local folklore tells of a cowboy jumping his horse from rim to rim over one hundred feet above the river on a bet).
Soldier Creek	No regionally significant outstandingly remarkable values identified
South Coal Wash	**Historic** Values consist of sites associated with ranching and mining, which are important for interpreting these events. They retain original character. **Cultural** This area has evidence of significant occupation and use by prehistoric peoples, representing more than one cultural period (Archaic, Fremont and Numic). Some features remain significant to Native American populations today. The sites have been somewhat isolated and retain integrity. They are important for interpreting regional prehistory. Many sites are eligible for the National Register of Historic Places. **Scenic** The varying landscape is accentuated by near and distant pinnacles detached from sandstone fins, high, varnish stained pour-offs, wind scooped alcoves, and Ponderosa Pines stark against pale cliffs. Middleground and background features provide a balanced, horizontal relief. **Recreation** Coal Wash is a popular destination for OHV users, hikers, and horseback riders due to rich scenic, wildlife, and cultural features.
South Salt Wash	No regionally significant outstandingly remarkable values identified
Spring Canyon	An arch provides a geologic value and the canyon provides an opportunity for hiking, but neither is considered regionally significant. Rock art near the mouth of Spring Canyon is within a quarter mile of the San Rafael River and supports the cultural value for that eligible river.
Three Canyon (Carbon County)	No regionally significant outstandingly remarkable values identified
Three Canyon (Emery County)	Identified ecological value, but determined not regionally significant
Trail Canyon	No regionally significant outstandingly remarkable values identified
Two Mile Canyon	Contains scenic quality, a unique geologic feature, Five Hole Arches, but values not river related
Virgin Springs Canyon	Presence of recreation, wildife, and cultural values, but determined not to be regionally significant.
Willow Creek	No regionally significant outstandingly remarkable values identified

Rivers Determined Eligible

The rivers identified on Table 4 were determined to be free-flowing and possess outstandingly remarkable values, regionally or nationally significant, and, therefore, eligible for inclusion in the national system of Wild and Scenic Rivers. (Reasons for tentative classification are provided on Table 5.) Some rivers are found to possess outstandingly remarkable values, however, because they are determined to be ephemeral in nature, flowing unpredictably only during flood events, they were not carried foreword as eligible.

Table 4 • Rivers Determined Eligible for Designation into the NWSRS

Segment Name	Segment Description	Outstandingly Remarkable Value(s)	Tentative Classification	Percent of river corridor is BLM lands
Barrier Creek	Canyonlands National Park boundary to mouth at Green River	scenic, recreation, cultural, ecologic	Wild	99
Bear Canyon Creek	Headwaters to mouth at Rock Creek	fish	Wild	43
Buckskin Canyon Creek	Headwaters to mouth at Rock Creek	fish	Wild	51
Cane Wash	Head of wash to mouth at San Rafael River	cultural, scenic, recreation	Scenic	89
Coal Wash	Confluence of North and South Forks of Coal Wash to mouth at North Salt Wash	recreation, scenic, cultural, historic	Recreational	100
Cottonwood Wash	Head of wash to county road at T. 20 S., R. 13 E., Sec. 14	scenic, cultural	Wild	80
Fish Creek	Scofield Reservoir to confluence with White River	fish	Scenic	15
Gordon Creek	Confluence of Bob Wright and Mud Water Canyons to mouth at Price	cultural, historic	Scenic	44

	River			
Green River*	County line near Nine Mile Creek to Chandler Canyon	scenic, recreation, wildlife, historic, cultural, fish, geologic, ecologic	Wild	66
	Chandler Creek to Florence Creek	scenic, recreation, wildlife, historic, cultural, fish, geologic, ecologic	Scenic	
	Florence Creek to Nefertiti boat ramp	scenic, recreation, wildlife, historic, cultural, fish, geologic, ecologic	Wild	
	Nefertiti boat ramp to Swasey's boat ramp	scenic, recreation, wildlife, historic, cultural, fish, geologic, ecologic	Recreational	
	Swasey's boat ramp to I-70 bridge	scenic, recreation, wildlife, historic, cultural, fish, geologic, ecologic	Recreational	
	I-70 bridge to mile 91 below Ruby Ranch	scenic, recreation, historic, cultural, fish, paleontologic	Scenic	
	Mile 91 below Ruby Ranch to Hey Joe Canyon	scenic, recreation, historic, cultural, fish	Wild	
	Hey Joe Canyon to Canyonlands National Park boundary	scenic, recreation, historic, cultural, fish	Scenic	
Keg Spring Canyon	Head of canyon to mouth at Green River	scenic, cultural, recreation	Wild	91
Muddy Creek	I-70 to Lone Tree Crossing	scenic, recreation, geologic, historic, cultural	Wild	92
	Lone Tree Crossing to South Salt Wash	scenic, recreation, geologic, historic, cultural	Scenic	
	South Salt Wash to county road below San Rafael and North Caineville	scenic, recreation, geologic, historic, cultural	Wild	

	Reefs			
Nine Mile Creek	Minnie Maude Creek to Bulls Canyon Bulls Canyon to mouth at Green River	historic, cultural, scenic historic, cultural, scenic	Recreational Wild	44
North Fork Coal Wash	Head of wash to Fix It Pass route Fix It Pass route to confluence with South Fork Coal Wash	recreation, scenic, cultural, historic recreation, scenic, cultural, historic	Wild Recreational	85
North Salt Wash	Confluence with Horn Silver Gulch to mouth at San Rafael River	scenic, wildlife, recreation, cultural	Wild	97

Price River	Confluence of Fish Creek and White River to Poplar Street bridge in Helper	fish, recreation	Recreational	68
	Mounds bridge Book Cliffs escarpment	cultural, historic	Scenic	
	Book Cliffs escarpment to mouth at Green River	scenic, cultural, geologic, wildlife, fish, recreation	Wild	
Range Creek	Headwaters to Trail Canyon	cultural, scenic, historic, wildlife	Wild	55
	Trail Canyon to drill holes at T. 17 S,. R. 16 E., Sec. 27	cultural, scenic, historic, wildlife	Recreational	
	Drill holes at T. 17 S., R. 16 E., Sec. 27 to mouth at Green River	cultural, scenic, historic, wildlife	Wild	
Rock Creek	North Fork headwaters to mouth at Green River	scenic, recreation, cultural, historic, fish	Wild	70
San Rafael River	Confluence of Ferron and Cottonwood Creeks to Fuller Bottom	cultural, scenic, recreation, geologic, historic, fish, wildlife, ecologic	Scenic	82
	Fuller Bottom to Johansen corral	cultural, scenic, recreation, geologic, historic, fish, wildlife, ecologic	Wild	
	Johansen corral to Lockhart Wash	cultural, scenic, recreation, geologic, historic, fish, wildlife, ecologic	Scenic	

San Rafael River (continued)	Lockhart Wash to Tidwell Bottom	cultural, scenic, recreation, geologic, historic, fish, wildlife, ecologic	Wild	
	Tidwell Bottom to mouth at Green River	cultural, scenic, recreation, geologic, historic, fish, wildlife, ecologic	Scenic	
South Fork Coal Wash	Head of wash to Eva Conover route	recreation, scenic, cultural, historic	Wild	94
	Eva Conover route to confluence with North Fork Coal Wash	recreation, scenic, cultural, historic	Recreational	

*BLM lands on the east side of the Green River corridor are administered by the Moab Field Office. The Price Field Office considered and included in the eligibility determinations for the Green River any outstandingly remarkable value present on these BLM lands.

Tentative Classification

Upon a determination of eligible, the rivers were given a tentative classification. Table 5 describes the reason rivers were given their tentative classification.

TABLE 5 • Documentation of Eligibility: Tentative Classification of Eligible Rivers

Segment Name	Segment Description	Tentative Classification	Reason for Classification
Barrier Creek	Canyonlands National Park boundary to mouth at Green River	Wild	Primitive area within Horseshoe Canyon WSA
Bear Canyon Creek	Headwaters to mouth at Rock Creek	Wild	Primitive area within Desolation Canyon WSA
Buckskin Canyon Creek	Headwaters to mouth at Rock Creek	Wild	Primitive area within Desolation Canyon WSA
Cane Wash	Head of wash to mouth at San Rafael River	Scenic	Much of reach is paralleled by OHV route; lower portion is within Sid's Mountain WSA

Coal Wash	North and South Forks of Coal Wash to confluence with North Salt Wash	Recreational	Presence of OHV route
Cottonwood Wash	Head of wash to county road at T. 20 S., R. 13 E., Sec. 14	Wild	Primitive area within Mexican Mountain WSA
Fish Creek	Scofield Reservoir to confluence with White River	Scenic	Presence of railroad, mostly inconspicuous and has low traffic
Gordon Creek	Confluence of Bob Wright and Mud Water Canyons to mouth at Price River	Scenic	Road, gas field development present, but mostly inconspicuous; segment crossed by railroad trestle and powerlines
Green River	County line near Nine Mile Creek to Chandler Canyon	Wild	Primitive area; majority of segment forms boundary for Desolation Canyon WSA
	Chandler Creek to Florence Creek	Scenic	Presence of road inconspicuous except for short stretches; annual traffic on road is seasonal and very minimal
	Florence Creek to Nefertiti boat ramp	Wild	Primitive area that forms boundary for Desolation Canyon WSA
	Nefertiti boat ramp to I-70 bridge	Recreational	Presence of roads, developed recreation sites, agricultural development and structures, private residences, and the town of Green River
	I-70 bridge to mile 91 below Ruby Ranch	Scenic	Some road access; presence of private ranches
	Mile 91 below Ruby Ranch to Hey Joe Canyon	Wild	Primitive area with a portion forming boundary for Horseshoe Canyon WSA
	Hey Joe Canyon to Canyonlands National Park boundary	Scenic	Paralleled by road inconspicuous except for short stretches

Keg Spring Canyon	Head of canyon to mouth at Green River	Wild	Primitive area within Horseshoe Canyon WSA
Muddy Creek	I-70 to Lone Tree Crossing	Wild	Primitive area
	Lone Tree Crossing to South Salt Wash	Scenic	Presence of road and spur roads
	South Salt Wash to county road below San Rafael and North Caineville Reefs	Wild	Majority is within Muddy Creek WSA and adjacent to Crack Canyon WSA; primitive area with route access to river corridor at Tomsich Butte and Hidden Splender Mine
Nine Mile Creek	Minnie Maude Creek to Bulls Canyon	Recreational	Presence of road, private ranches, and agricultural development and structures
	Bulls Canyon to mouth at Green River	Wild	Primitive area
North Fork Coal Wash	Head of wash to Fix It Pass route	Wild	Primitive area within Sid's Mountain WSA
	Fix It Pass route to confluence with South Fork Coal Wash	Recreational	Presence of OHV route
North Salt Wash	Confluence with Horn Silver Gulch to mouth at San Rafael River	Wild	Primitive area largely within Sid's Mountain WSA
Price River	Confluence of Fish Creek and White River to Poplar Street bridge in Helper	Recreational	Presence of Highway 6, railroad, bridges; and residential, commercial, industrial and municipal development
	Mounds bridge Book Cliffs escarpment	Scenic	Crossing of Highway 6 and railroad, facilities at Woodside, two private ranches, and a few access roads
	Book Cliffs escarpment to mouth at Green River	Wild	Except for road present for short distance within escarpment, the area is primitive and largely within Desolation Canyon WSA

Range Creek	Headwaters to Trail Canyon	Wild	Primitive area
	Trail Canyon to drill holes at T. 17 S,. R. 16 E., Sec. 27	Recreational	Presence of road and private ranches
	Drill holes at T. 17 S., R. 16 E., Sec. 27 to mouth at Green River	Wild	Primitive area with large portion within Desolation Canyon WSA
Rock Creek	North Fork headwaters to mouth at Green River	Wild	Primitive area within Desolation Canyon WSA

San Rafael River	Confluence of Ferron and Cottonwood Creeks to Fuller Bottom	Scenic	Accessible by road; presence of gaging station and enclosure with swing panels
	Fuller Bottom to Johansen corral	Wild	Primitive area within Sid's Mountain WSA
	Johansen corral to Lockhart Wash	Scenic	Accessible by road; presence of bridge and developed recreation site
	Lockhart Wash to Tidwell Bottom	Wild	Primitive area within Mexican Mountain WSA
	Tidwell Bottom to mouth at Green River	Scenic	Crossing of I-70, SR 24, and county road; additional road access in places
South Fork Coal Wash	Head of wash to Eva Conover route	Wild	Primitive area within Sid's Mountain WSA
	Eva Conover route to confluence with North Fork Coal Wash	Recreational	Presence of OHV route

III. Suitability

Determination of Suitability

Rivers determined to be eligible for inclusion into the National Wild and Scenic Rivers System are further evaluated to determine their suitability for inclusion into the national system.

The purpose of the suitability step of the study process is to determine whether eligible rivers would be appropriate additions to the national system by considering tradeoffs between corridor development and river protection. Suitability considerations include the environment and economic consequences of designation and the manageability of a river if it were designated by Congress.

The environmental impact statement for the resource management plan evaluates impacts that would result if the eligible rivers were determined suitable and managed to protect their free-flowing nature, tentative classification, and outstandingly remarkable values. It also addresses impacts that would result if the eligible rivers are not determined suitable and their values are not provided protective management. The range of alternatives include Alternative 1 (No Action), which does not address suitability and leaves rivers eligible, and Alternative C, which finds all eligible rivers suitable. Alternatives A, B and D find portions of eligible rivers as suitable. Alternative tentative classifications are also evaluated.

In addition to the impact analysis addressed by alternative, the following suitability considerations are applied to each eligible river in Table X.4:

- Characteristics which do or do not make the area a worthy addition to the national system
- Status of land ownership and use in the area
- Uses, including reasonably foreseeable potential uses, of the area and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the national system of rivers; and the values which could be foreclosed or diminished if the area is not protected as part of the national system
- Interest by federal, tribal, state, local, and other public entities in designation or non-designation of a river, including the extent to which the administration of the river, including the costs thereof, can be shared by the above mentioned entities
- Ability of the agency to manage and protect the values of a river area if it were designated, and other mechanisms to protect identified values other than Wild and Scenic Rivers designation

- The estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it were included in the national system

- The extent to which administration costs will be shared by local and state governments

Coordination

Table 6 lists all interdisciplinary meetings held during the suitability step of the study process.

Table 6: Suitability Study Meetings*

Date	Attendees	
June 2, 2003	Brad Higdon (BLM) Ray Peterson (Emery Co.) Rex Sacco (Carbon Co.) Dave Levanger (Carbon Co.)	Dennis Willis (BLM) Gary Armstrong (BLM Contractor) Wayne Ludington (BLM)
June 12, 2003	Brad Higdon (BLM) Dave Levanger (Carbon Co.) Wes Johnson (BLM Contractor) Gary Armstrong (BLM Contractor) Kerry Flood (BLM) Val Payne (UDNR)	Wayne Ludington (BLM) Ray Peterson (Emery Co.) Craig Johansen (Emery Co.) Rex Sacco (Carbon Co.) Karl Ivory (BLM)
June 30, 2003	Val Payne (UDNR) Brad Higdon (BLM) Gary Armstrong (BLM Contractor) Kerry Flood (BLM) Floyd Johnson (BLM) Wayne Ludington (BLM)	Ray Peterson (Emery Co.) Gary Kofford (Emery Co.) Craig Johansen (Emery Co.) Dave Levanger (Carbon Co.) Rex Sacco (Carbon Co.)
July 2, 2003	Dennis Willis (BLM) Brad Higdon (BLM) Craig Johansen (Emery Co.) Ray Peterson (Emery Co.) Will Stokes (SITLA)	Lavonne Garrison (SITLA) Dave Levanger (Carbon Co.) Wayne Ludington (BLM) Rex Sacco (Carbon Co.)
July 28, 2003	Brad Higdon (BLM) Ray Peterson (Emery Co.) Drew Sitterud (Emery Co.) Gayla Williams (Carbon Co.) Blaine Miller (BLM) Maggie Kelsey (BLM) Jack Wood (BLM)	Val Payne (UDNR) Ruth McCoard (BLM) Floyd Johnson (BLM) Gary Armstrong (BLM Contractor) Wayne Ludington (BLM) Gary Kofford (Emery Co.)

*Does not include Price Field Office internal interdisciplinary team meetings.

Suitability Study

In Table 7, the suitability considerations listed above are applied to each eligible river.

Public comment received on the Draft EIS/RMP will be used to improve the documentation of the suitability considerations presented below, as well as the documentation of impacts that would result from the various alternatives. The actual determination of whether or not each eligible river segment is suitable is a decision that will be made in the Record of Decision for the Price RMP.

Table 7 • Suitability Study

Consideration	Consideration Applied to Eligible River
Barrier Creek	
Characteristic which would or would not make it suitable	This river segment possesses outstandingly remarkable scenic, recreational, cultural, and ecological values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 99% federal (BLM lands) with a small portion (1%) of state lands. This river segment is within Horseshoe Canyon WSA and is managed according to the Interim Management Policy for Lands Under Wilderness Review (IMP), which provides for primitive recreation.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. Designation would provide protection of free-flowing condition of the river and associated values in addition to WSA status.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.

Bear Canyon Creek	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable fish and scenic values. These values are described in detail in Table 3.
Land ownership and current use	Within the river corridor, 43 % of the land is federal (BLM), 34 % is state, and 23 % is private. Upper reaches of this river is used for livestock grazing. The majority of the river is within Desolation Canyon WSA and managed according to the IMP. The introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, the introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future. Designation of the stream would provide additional protection to the fish value.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Buckskin Canyon Creek	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable fish and scenic values. These values are described in detail in Table 3.
Land ownership and current use	Within the river corridor, 51 % of the land is federal (BLM), 4 % is state and 45 % is private. Upper reaches of this river is used for livestock grazing. The majority of the river is within Desolation Canyon WSA and managed according to the IMP. The introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, the introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future. Designation of the stream would provide additional protection to the fish value.

Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Cane Wash	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable cultural, scenic, and recreational values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 89 % federal (BLM lands) and 11% state lands. Present within or along the majority of Cane Wash is a designated off highway vehicle (OHV) route. The lower portion of Cane Wash is within Sid's Mountain WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS. Management for the protection of outstandingly remarkable values could conflict with the designation of the OHV route. Although OHV use in this area is considered recreational, the designated route does not contribute to the outstandingly remarkable recreational value.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Coal Wash	
Characteristic which would	This river segment possesses outstandingly remarkable recreation,

or would not make it suitable	scenic, cultural, and historic values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the corridor is entirely federal (BLM). An OHV route follows the wash bottom. Other uses include recreation, livestock grazing, and wildlife habitat. Much of this segment is within Sid's Mountain WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS. Management for the protection of outstandingly remarkable values could conflict with the designation of the OHV route. Although OHV use in this area is considered recreational, the designated route does not contribute to the outstandingly remarkable recreational value.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Cottonwood Wash	
Characteristic which would or would not make it suitable	This river segment possesses outstandingly remarkable scenic and cultural values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 80% federal (BLM lands) and 20% state lands. Current uses include primitive recreation and livestock grazing. This river segment is within Mexican Mountain WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. Designation would provide free-flowing condition of river and associated values protection in addition to WSA status.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if	Manageability if designated and other means of protecting values will be

designated, and other means of protecting values	extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Fish Creek	
Characteristic which would or would not make it suitable	This river segment possesses outstandingly remarkable fish values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 15 % federal (BLM lands), 58% private, and 27% state lands or other lands. Current uses river and area include a railroad corridor, recreation, livestock grazing, cold water fishery, private timber harvesting, and wildlife habitat. It also provides a corridor for railroad transportation and water diversion and development.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, potential uses included development of a utility corridor, timber harvesting, outfitting, dude ranching, fishing and other recreational activities. Of these outfitting and fishing could be enhanced due to designation.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Because 15 % of the river area is federally owned, management of this river as Wild and Scenic by the BLM would not be practical. This river is a Blue Ribbon Fishery. Additionally, because this river is imperative to the water supply of Carbon County, current county zoning and regulations are adequate to ensure non-degradation of the watershed and associated values.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Gordon Creek	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable cultural and historic values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 44 % federal (BLM lands), 39% state lands, and 17% private.

	The river corridor is within a developed coalbed methane gas field. Other uses include recreation, livestock grazing, a private residential area, and wildlife habitat. Gordon Creek is also used for irrigation water.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, the Price River Water Conservancy District has proposed that a water storage reservoir be constructed on this segment.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS. However, because less than 50% of the river area is federally owned, management of this river as Wild and Scenic would not be practical.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Green River	
Characteristic which would or would not make it suitable	The Green River possesses outstandingly remarkable scenic, recreation, wildlife, historic, cultural, fish, geologic, and ecologic values many of which are nationally significant. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 66% federal (BLM lands), 18% Indian reservation (Ute), 1% state lands, and 15% private. The upper river segment through Desolation and Gray Canyons is managed according to the Desolation and Gray Canyons River Management Plan (1979), which provides for the allocation of private and commercial boating trips. The segment through Labyrinth Canyon is also managed for recreational boating through a MOU between the BLM and the State of Utah. Downstream of Swasey's Rapid the river is considered a navigable waterway with state jurisdiction. Much of the lands between Swasey's Rapid and the confluence with the San Rafael River is private, used for agriculture, and has residential, commercial, and municipal development in and around the town of Green River. There is a large diversion dam at Tusher Wash, upstream of the town of Green River. A wide variety of activities occur within the river corridor. Approximately xx miles of WSAs abut the Green River on the west side in Desolation, Gray, and Labyrinth Canyons and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.

designated; and values that would be diminished if not designated	
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Management prescribed in the Desolation and Gray Canyons River Management Plan is consistent with a Wild and Scenic River designation. Desolation Canyon is on the National Register of Historic Places
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Keg Spring Canyon	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable scenic, cultural, and recreation value. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 91% federal (BLM lands) and 9% state lands. This river is within Horseshoe Canyon WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. Designation would provide free-flowing condition of river and associated values protection in addition to WSA status.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Muddy Creek	
Characteristic which would	This river possesses outstandingly remarkable scenic, recreation,

or would not make it suitable	geologic, historic, and cultural values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 92% federal (BLM lands), 7% state lands, and 1% private lands. Uses include livestock grazing and trailing, recreation, and wildlife habitat. Much of this river flows through Muddy Creek and Crack Canyon WSAs and is managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Nine Mile Creek	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable cultural, historic, and scenic values. This river area, informally referred to as "The World's Longest Art Gallery" is at least nationally significant for its concentration of prehistoric rock art and evidence of Native American habitation. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 44% federal lands, 48% private, and 7% state lands. Current uses include farming and ranching, recreation, tourist services and outfitting, oil and gas development, and utility and gas pipeline corridor.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, there is currently a proposal before Congress to designate much of Nine Mile Canyon a National Historic Landmark. At gas pipeline is proposed to be added to an existing pipeline corridor.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if	Manageability if designated and other means of protecting values will be

designated, and other means of protecting values	extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
North Fork Coal Wash	
Characteristic which would or would not make it suitable	This river segment possesses outstandingly remarkable recreation, scenic, cultural, and historic values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 85% federal (BLM lands) and 15% state lands. An OHV route follows much of the wash bottom. Other uses include recreation, livestock grazing, and wildlife habitat. This segment is within Sid's Mountain WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS. Management for the protection of outstandingly remarkable values could conflict with the designation of the OHV route. Although OHV use in this area is considered recreational, the designated route does not contribute to the outstandingly remarkable recreational value.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
North Salt Wash	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable scenic, wildlife, recreation, and cultural values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 97% federal with 3% state lands located at the mouth of the river.

	Uses include recreation, livestock grazing, and wildlife habitat. This segment is within Sid's Mountain WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. Designation would provide free-flowing condition of river and associated values protection in addition to WSA status.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Price River	
Characteristic which would or would not make it suitable	The Price River possesses outstandingly remarkable scenic, cultural, historic, recreation, fish, wildlife, and geologic values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 68% federal (BLM lands), 8% state lands, and 24% private lands. The private lands are predominantly around Helper, Price, Wellington, and Woodside. There is extensive residential, agricultural, industrial, transportation, and municipal development in these areas. In less developed areas, uses include livestock grazing, recreation, and wildlife habitat. This river is an essential source of culinary and irrigation water for Carbon County. There are a number of diversions throughout this river area. The lower segment of the Price River is within Desolation Canyon WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.

The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Range Creek	
Characteristic which would or would not make it suitable	Range Creek possesses outstandingly remarkable cultural, historic, scenic, and wildlife values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 55% federal (BLM lands), approximately 17% state lands, and approximately 28% private lands. Because much of the river area is privately owned and behind locked gates, access along Range Creek is limited. Uses include ranching, livestock grazing, timber harvesting, wildlife habitat, and some recreation. The lower end of Range Creek (lower 1 ½ miles) is within Desolation Canyon WSA and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
Rock Creek	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable scenic, recreation, cultural, historic, and fish values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 70% federal (BLM lands), 5% state lands, and 25% private lands. Current uses include livestock grazing and recreation. The introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future. Most of the river area is within Desolation Canyon WSA and

	managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, the introduction of native Colorado River Cutthroat Trout is expected to be implemented by Utah Division of Wildlife Resources in the reasonably foreseeable future. Designation of the stream would provide additional protection to the fish value.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.
San Rafael River	
Characteristic which would or would not make it suitable	This river possesses outstandingly remarkable cultural, historic, scenic, recreation, wildlife, fish, ecologic, and geologic values and flows through an area nationally recognized for its heritage, recreation, and scenery. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 82% federal (BLM lands), 7% state lands, and 11% private lands. Uses include recreation, livestock grazing, and wildlife habitat. Much of the river is within Sid's Mountain and Mexican Mountain WSAs and managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS. In addition, Utah Power and Light has proposed a dam site in the upper segment. Pacificorp is developing plans for the Hunter #4 plant along a larger tributary of the San Rafael River, which would require an additional seven thousand acre feet of water annually.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which	State and local governments would not support management cost if the

administration costs will be shared by local and state governments	river is designated.
South Fork Coal Wash	
Characteristic which would or would not make it suitable	This river segment possesses outstandingly remarkable recreation, scenic, cultural, and historic values. These values are described in detail in Table 3.
Land ownership and current use	Ownership within the river corridor is 94% federal (BLM lands) and 6% state lands. An OHV route follows much of the wash bottom. Other uses include recreation, livestock grazing, and wildlife habitat. This area is within Sid's Mountain WSA managed according to the IMP.
Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated	Uses and values affected will be addressed in the impact analysis for the Price RMP/EIS.
Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing	State and local governments are unsupportive of any determination of suitable. There is likely support from the environmental community for determinations of suitability.
Manageability of the river if designated, and other means of protecting values	Manageability if designated and other means of protecting values will be extrapolated from the impact analysis for the Price RMP/EIS. Management for the protection of outstandingly remarkable values could conflict with the designation of the OHV route. Although OHV use in this area is considered recreational, the designated route does not contribute to the outstandingly remarkable recreational value.
The estimated costs of administering the river, including costs for acquiring lands	
The extent to which administration costs will be shared by local and state governments	State and local governments would not support management cost if the river is designated.

APPENDIX 4

Price Field Office
Listed, Sensitive, and Other Native Species
Prepared by the Utah Field Office, U.S. Fish and Wildlife Service
February, 2004

Listed Species

Black-footed ferret, *Mustela nigripes*, Endangered
Bald eagle, *Haliaeetus leucocephalus*, Threatened
Mexican spotted owl, *Strix occidentalis lucida*, Threatened
Southwestern Willow Flycatcher, *Empidonax traillii extimus*, Endangered
Western yellow-billed cuckoo, *Coccyzus americanus occidentalis*, Candidate
Bonytail, *Gila elegans*, Endangered
Colorado pikeminnow, *Ptychocheilus lucius*, Endangered
Humpback chub, *Gila cypha*, Endangered
Razorback sucker, *Xyrauchen texanus*, Endangered
Uinta Basin hookless cactus, *Sclerocactus glaucus* , Threatened
Wright fishhook cactus, *Sclerocactus wrightiae* , Endangered
San Rafael cactus, *Pediocactus despainii*, Endangered
Winkler cactus, *Pediocactus winkleri*, Threatened
Barneby reed-mustard, *Schoenocrambe barnebyi*, Endangered
Jones cycladenia, *Cycladenia jonesii*, Threatened
Maguire daisy, *Erigeron maguirei*, Threatened
Last Chance townsendia, *Townsendia aprica*, Threatened
Graham's beardtongue, *Penstemon grahamii*, Candidate

Sensitive/Native Species

White-tailed prairie dog, *Cynomys leucurus*, Petitioned for Federal listing
Greater sage-grouse, *Centrocercus urophasianus*, Petitioned for Federal listing
Migratory birds, Migratory Bird Treaty Act and Executive Order
Golden eagle, *Aquila chrysaetos*, Eagle Protection Act, FWS BCC[1]
Peregrine falcon, Falco peregrinus, FWS BCC
Virginia's warbler, *Vermivora virginae*, PIF Priority Species[2], FWS BCC
Gray vireo, *Vireo vicinior*, PIF Priority Species, FWS BCC
Brewer's sparrow, *Spizella breweri* PIF Priority Species, FWS BCC
Broad-tailed hummingbird, *Selasphorus platycercus*, PIF Priority Species, FWS BCC

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[1] The Fish and Wildlife Service's 2002 List of Birds of Conservation Concern (BCC) identifies those migratory and non-migratory avian species that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973(ESA)(16 U.S.C. 1513-1543).
[2] PIF (Partners in Flight) Priority Species are those species recognized by Utah Partners In Flight as birds most in need of conservation. Management issues, conservation recommendations, and suggestions for research and educational outreach are described for these species in the Utah Partners in Flight Avian Conservation Strategy.

Ferruginous hawk, *Buteo regalis*, PIF Priority Species, FWS BCC
Black-throated gray warbler, Dendroica nigrescens, PIF Priority Species, FWS BCC
Sage sparrow, *Amphispiza belli nevadensis*, PIF Priority Species, FWS BCC
Loggerhead shrike, *Lanius ludovicianus*, FWS BCC
Swainson's hawk, *Buteo swainsonii*, FWS BCC
Prairie falcon, *Falco mexicanus*, FWS BCC
Pinyon jay, *Gymnorhinus cyancephalus*, FWS BCC
Burrowing owl, *Anthene cunicularium*, State Species of Concern
Arizona toad*, Bufo micrascaphos*, State Species of Concern
Western toad, *Bufo boreas*, State Species of Concern
Roundtail Chub, *Gila robusta*, State Threatened Species
Bluehead Sucker, *Catostomus discobolus*, State Species of Concern
Flannelmouth Sucker, *Catosomus latipinnis*, State Species of Concern
Basalt milk-vetch, *Astragalus subcinereus basalticus*
Creutzfeldt-flower, *Cryptantha creutzfeldtii*
Smith wild-buckwheat, *Eriogonum smithii*
Mussentuchit gilia, *Aliciella (Gilia) tenuis*
Alcove bog-orchid, *Habenaria zothecina*
Entrada skeleton-weed, *Lygodesmia entrada*
Book Cliffs blazing-star, *Mentzelia multicaulis labrina*
Jones' indigo-bush, *Psorothamnus polydenius jonesii*
Cedar Mountain flame-flower, *Talinum thompsonii*

APPENDIX 5

Objectives for Cultural Resource Management Categories

Management Category	Objectives
Conservation for Future Use	A cultural property in this category is deemed worthy of segregation from all other land or resource uses, including cultural resource uses, that would threaten the its condition or setting. Sites placed in this category are intended to remain in this use category until specified provisions are met in the future. • Protect sites from both natural and human-caused deterioration. Such protection includes closing the site to all conflicting uses. • When cultural resource sites are initially allocated to this use category, provisions will be specified under which the cultural property might be used in the future, in other words, provisions that must be met prior to the release of the site from this use category. • A record of each site in this use category will be maintained by the BLM Archaeologist at the Field Office. This record will contain the following information: o Specific information or values in the cultural property for which it is being protected. o An explanation as to why the cultural property is not presently eligible for consideration for other uses (e.g. why the cultural property is not eligible as the subject of scientific study involving the physical alternation). o Provisions specified under which the cultural property might be used in the future.
Public Use	Sites managed for public values must first have their information potential recovered through appropriate study guided by an approved research design to mitigate the impacts of visitor use and to provide information for interpretation. • Sites where scientific values are present, these values need to be protected or mitigated before the site is turned over to public use, including use related to SRP; • Provide sufficient supervision to protect both the public and the scientific values of these sites; • Provide access to these sites for the identified public users; and • Prepare specific site management plans for sites in this category • Information from test/sampling excavations will be used to define the extent of the sites and to obtain information needed to interpret them.
Scientific Use	Sites managed for their information potential will be avoided until their potential is collected through study directed by an approved research design. • Sites in this category will be available for research; • These sites will be protected until they have been appropriately studied; • Ensure that study is guided by an appropriate research design; • Mitigate conflicts with other resource uses by appropriate study (BLM will determine what study is appropriate);
Traditional Use	• Consult with traditional user groups (Native American Tribes, heritage groups, etc.) to identify areas/sites for traditional use. • Provide access for the particular segments of the public to which these sites are important in maintaining the cultural identity, heritage, or well-being of the group. • Determine limitations for each area/site.
Experimental Use	• Determine nature of experiment and analyze on a case-by-case basis.
Discharged from Management	Sites where no cultural resource use can be identified will be removed protective measures. There will be no limitations on management or activities resulting from cultural resources.

APPENDIX 6

Visual Resource Management

Visual resource management is the system by which the BLM classifies and manages scenic values and visual quality of public lands. The system is based on research that has produced ways of assessing the natural attributes of the landscape in objective terms. After inventory and evaluation, lands are given visual ratings (management classes), which determine the amount of modification allowed to the basic elements of the landscape.

Inventory and Evaluation of Visual Resource Management

The visual resource inventory process (BLM Handbook 8410-1) provides BLM managers with a means for determining visual values. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four visual resource inventory classes. These inventory classes represent the relative value of the visual resource.

Visual Resource Management Classes

Visual resource management classes represent the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. The four classes are described below:

Class I

- preserve the existing character of the landscape
- does not preclude very limited management activity
- level of change to the characteristic landscape should be extremely low and must not attract attention

Class II

- retain the existing character of the landscape
- management activities may be seen, but should not attract the attention of the casual observer

Class III

- partially retain the existing character of the landscape
- areas where changes in the basic elements (form, line, color, or texture) caused by a management activity should not dominate the view of the casual observer
- changes to the landscape may attract attention but may not dominate the landscape.

Class IV

- Provide for the management activities that require major modification of the existing character of the landscape
- Changes may be dominant landscape components

Rehabilitation Area Objective

Areas in need of rehabilitation should be flagged during the inventory process. The level of rehabilitation will be determined through the RMP process by assigning the VRM class approved for that particular area.

APPENDIX 7

Best Management Practices for Raptors and Associated Habitats
September 2003

Raptor management would be administered under the auspices of Best Management Practices (BMPs). Management activities and land disturbing actions would be subject to the criteria and processes specified within these BMPs. The implementation of spatial and seasonal buffers under the BMPs would be comparable to the U.S.Fish and Wildlife Service, Utah Field Office *"Guidelines for Raptor Protection From Human and Land Use Disturbances"*, January 2002" (Guidelines), Table 2. Modifications could be implemented if the following specified criteria have been met. Listed, proposed, candidate, and state-sensitive species would be emphasized; particularly bald eagle, golden eagle, peregrine falcon, ferruginous hawk, and burrowing owl. Modification of the buffers could be made pending results of Section 7 Consultation, except in the case of State Sensitive Species for which consultation is not required. All raptor species would continue to receive protection under the Migratory Bird Treaty Act (MBTA).

BLM would coordinate with the UDWR and FWS prior to modifying seasonal buffers for raptors to correspond more closely with regional variations in the nesting chronology of local raptor species.

Modifications of the spatial and seasonal buffers identified in the FWS *"Guidelines"* could be a viable management option. Modifications would ensure that nest protection would occur, but may also allow various considerations that could deviate from the buffers within the FWS *"Guidelines."*

Criteria that should be met, prior to implementing modifications to the spatial and seasonal buffer restrictions in the FWS *"Guidelines",* would include the following:

1. Completion a site specific assessment. See example (Attachment 1.)

2. Written documentation by the BLM Field Office Biologist would confirm {as stated above in coordination with UDWR and USFWS}that implementation of the modifications would not impact the success of the nest or the suitability of the site for future nesting. The field office biologist would provide their recommendation to the appropriate decision maker. Modifications to the *"Guidelines"* would not be implemented if it is determined that impacts to the nest would occur or the suitability of the site for future nesting would be jeopardized.

3. A monitoring strategy would be employed by a BLM, or other qualified raptor biologist. Impacts would be documented of authorized activities to determine if the stipulations and modifications were implemented as described in the EA or Conditions of Approval, and were adequate to protect the nest site. Should impacts be identified during monitoring of an activity, BLM

would develop an appropriate course of action that would minimize or mitigate to the extent possible. A report on the monitoring would be completed and forwarded to UDWR for incorporation into the NHP raptor database.

4. Long term population monitoring: The management objective is to establish and implement a post-project and post-mitigation monitoring plan to determine possible impacts to the local raptor populations as well as success of mitigation measures. Monitoring should include documentation of raptor nesting success, use of historical roost concentration areas, as well as recovery of affected prey base and habitats. Individual strategies for specific species monitoring would be developed cooperatively between BLM, UDWR, USFWS and the action proponent.

Habitat Enhancement

Raptor habitat management and enhancement, both within and outside of buffers, would be an integral part of these BMPs, with the understanding that in order for raptors to maintain high densities and maximum diversity, it is necessary that the habitat upon which they and their prey species depend must be managed to promote healthy and productive rangelands. Habitat loss, fragmentation, and habitat disturbance would be minimized and mitigated to the extent practical.

Protection of Nest Sites and Buffer Zones

Note: Maintenance and operations of existing facilities are acceptable within these guidelines.

Unoccupied nests:

(1) All Activities, including New Oil and Gas Leases: Surface-disturbing activities occurring outside of the breeding season would be allowed during a seven-year nest monitoring period, as long as the activity would not cause the nest site to become unsuitable for future nesting. Facilities and other permanent structures would be allowed as long as they meet these criteria.

After seven years without occupancy, authorizations for activities within the identified buffer for the species involved would be allowed.

(2) Existing Oil and Gas Leases: Nests of the five raptor species listed above in the Introduction, which occur on existing oil and gas leases, would continue to receive protection. Surface-disturbing activities occurring outside of the breeding season would be allowed during a two-year nest monitoring period, as long as the activity would not cause the nest site to become unsuitable for future nesting. Facilities and other permanent structures would be allowed as long as they meet these criteria.

(3) All Activities: Non-permanent land use activities would be allowed within the spatial buffer of nests during the nesting period, as long as those activities are shown to be non-impacting to nesting raptors.

Occupied Nests:

All leases: Land use activities which would have an adverse impact would not be allowed within the spatial buffer of occupied nests.

Consideration of Mitigation Measures

Mitigation measures would be applied as necessary to mitigate adverse impacts of resource uses and development on nesting raptors.

Specific Strategies to be Implemented Regarding Other Resource Uses and Development

Following are management strategies designed to reduce or eliminate potential conflicts between raptors and other resource uses. This is a list of examples and is not intended to be an all-inclusive list. In all cases where a proposal for an activity on BLM lands is made and an EA developed, the site-specific analysis process identified in Attachment 1 should be implemented to identify and mitigate impacts to raptors from the proposal. These strategies apply to both BLM and applicant-generated proposals. The strategies are as follows:

A. Cultural Resources

1. Excavation and studies of cultural resources in caves and around cliff areas should be delayed until a qualified biologist surveys the area to be disturbed or impacted by the activity for the presence of raptors or nest sites.

B. Forestry and Harvest of Woodland Products

1. Timber harvest would be subject to an analysis and be conducted in a manner that meets raptor nest and snag protection criteria. This would also apply to area for wood gathering and firewood sales.

C. Livestock Grazing

1. Manage rangelands and riparian areas in a manner that promotes proper functioning condition. Rangeland Standards and Guidelines should be implemented on each grazing allotment. It is important to note that certain raptor species are tied to specific habitat types, and that consideration must be made on a site specific basis when vegetation manipulation projects are proposed, to determine which raptor species may benefit and which may be negatively impacted by the desired vegetation composition following treatment.

2. Locations of sheep camps and other temporary intrusions should be located in areas away from nest sites during the nesting season. Placement of salt and mineral blocks should also be located away from nesting areas.

D. OHV Use

1. Special Recreation Management Areas (SRMAs) that are developed for OHV use should not be located in areas that have important nesting, roosting, or foraging habitat for raptors. Proposed areas should be inventoried to make certain that lands where high OHV use is expected are free of nesting sites as part of the review for consideration of the designation.

2. OHV use will be limited to designated roads, trails and managed open areas. Lands categorized as "Open" for OHV use should not be in areas important to raptors for nesting, roosting, and foraging

3.When proposals for OHV races and other events are received, the area to be impacted, should be surveyed by field office biologist to determine if the area is utilized by raptors. Potential conflicts should be identified and mitigated prior to the issuance of any permit.

E. Oil and Gas Development

1. Existing leases may be modified using the Code of Federal Regulations (CFR), 43 CFR 3101.1-2, which allows for well site location and timing to be modified from that requested by the lessee to mitigate conflicts at the proposed site, and states that the location can be moved up to 200 meters and the timing of the actual drilling can be delayed for 60 days to mitigate environmental concerns. Provisions are also present within the lease, which allow the BLM to impose additional restrictions at the permitting phase, if the restrictions will prevent unnecessary and undue degradation of lands or resources. BLM may employ additional restrictions in the context of the land use plan on a lease to protect a species which is listed by a state as threatened or endangered, but is not Federally-listed.

2. Raptor issues would be evaluated and baseline data reviewed, prior to the time that lands are made available for oil and gas leasing.

F. Realty

1. Lands proposed for disposal that includes raptor nesting, roosting, or important foraging areas would be analyzed and evaluated for the relative significance of these resources before a decision is made for disposal or retention.

2. A priority list of important raptor habitat areas on state and private lands should be developed and utilized as lands to be acquired by BLM when opportunities arise to exchange or otherwise acquire lands.

3. Lands and realty authorizations should include appropriate stipulations to avoid and mitigate impacts to raptors.

G. Recreation

1. Proposals for authorized events such as mountain bike races, or development of biking trails near raptor nesting areas should be avoided.

2. Rock climbing activities should be authorized only in areas where there are no conflicts with cliff nesting raptors.

3. In existing SRMAs, high recreation use areas where nest sites have been made unsuitable by existing disturbance or habitat alteration, mitigation should be considered to replace nest sites with artificial nest structures in nearby suitable habitat, if it exists, and consider seasonal protection of nest sites through fencing or other restrictions.

4. Dispersed recreation should be monitored to identify where this use may be impacting nesting success of raptors.

H. Wild Horse Program

1. Impacts to raptors from the wild horse and burro program generally can be attributed to overgrazing in areas where horse numbers are in excess of the carrying capacity of the range. Removal of horses, as described in the various herd management area plans, should continue, to prevent further damage to rangelands.

I. Wilderness

1. Wilderness or WSA designation is considered a positive impact to raptors as most permanent developments are not allowed and lands are managed to maintain natural qualities, including native wildlife.

7. Inventory and Monitoring

A. Each Field Office should actively manage a raptor database as part of the BLM Corporate database. Raptor data should be collected and compiled utilizing the Utah Raptor Data Standards protocol, so that personnel from other agencies can access the data. This database should be updated as new inventory and monitoring data becomes available. The data should also be forwarded to UDWR and the NHP, which is identified as the central location for raptor data storage and analysis for the State of Utah.

B. Use of Seasonal Employees and volunteers, as well as "Challenge Cost Share" projects, could be utilized to augment the inventory and monitoring of raptor

nests within the planning unit, with the data entered into the above-mentioned databases at the close of each nesting season. Project proponents, such as energy development companies, should be encouraged to participate and help support an annual raptor nest monitoring effort within their areas of interest.

C. Active nest sites should be monitored during all authorized activities that may have an impact on the behavior or survival of the raptors at the nest site. A qualified biologist would conduct the monitoring and a determination made as to the impacts of the activity. A final report of the impacts of the project should be placed in the EA file, with a copy submitted to the NHP. The report would be made available for review and should identify what activities may affect raptor-nesting success, and should be used to recommend appropriate buffer zones for various raptor species.

As data are gathered, and impact analysis is more accurately documented, "adaptive management" could be applied. Authorization of future activities could take this information into account, better protecting the raptors, and possibly allowing more development and fewer restrictions, if data indicated that the restrictions implemented are beyond those necessary to protect raptors.

ATTACHMENT 1

Sample Site Specific Analysis

Observer(s)_____ **Date**_____

1. **Conduct a site visit to the area of the proposed action and complete the raptor nest site data sheet according to BLM data standards**.

2. Area of Interest Documentation (**Bold** items require completion, other information is optional)

State_____ **Office**_____ **Management Unit** _____

Project ID# _____

Location (Description)

Legal T____ , R ____ , Sec. _____ , 1/4, _____ 1/4, _____ or UTM Coordinates

Latitude_____ Longitude_____

Photos Taken Y( ) N( )

Description of photos:

_____
_____
_____
_____
_____
_____

Raptor Species_____ Confirmed_____ Unconfirmed_____

Distance From Proposed Disturbance to: Nest _____
Perch_____
Roost_____

Line of Site Evaluation From: **Nest** _____
Perch_____
Roost_____

Extent of Disturbance: Permanent_____ Temporary____
Distance_____ Acreage_____

Length of Time_____ Timing Variations_____ Disturbance Frequency_____

Other Disturbance Factors: Yes (If yes, explain what and include distances from nest to disturbances) No

Approximate Age of Nest: New_____ **Historical**: (Number of Years)_____

Evidence of Use (Describe):

Habitat Values Impacted:

Proportion of Habitat Impacted (Relate in terms of habitat available):

Estimated Noise Levels of Project (db):_____

Available Alternative(s) (e.g., location, season, technology):

Associated Activities:

Cumulative Effects of Proposal and Other Actions in Habitat Not Associated With the Proposal:

Potential for site Rehabilitation: High_____ Low_____

Notes/Comments:

Summary of Proposed Modifications:

Possible modifications to the spatial and seasonal buffers within the FWS *"Guidelines"* include the following:

Rationale:

Summary of Proposed Mitigation Measures:

Possible mitigation measures related to the proposal include the following:

Rationale:

Summary of Alternatives Considered:

Possible alternatives to the proposal include the following:

Rationale:

Recommendation to FO Manager Based on Above Findings:

Field Office Wildlife Biologist Date

ATTACHMENT 2

References Cited

Call, M., 1979, "Habitat Management Guides For Birds Of Prey." U.S. Department of Interior, Bureau of Land Management. Tech. Note 338. Denver, Co. 70 pp.

Code of Federal Regulations; 43 CFR 3101.1-2, Leasing Regulations

Eagle Protection Act; U.S.C. 668

Executive Order (EO) 13186; 2001. U.S. Department of Interior, Bureau of Land Management.

Endangered Species Act (ESA); 16 U.S.C. 1513-1543

Federal Land Policy Management Act (FLPMA)

Migratory Bird Treaty Act (MBTA); 16 U.S.C. 703-712

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Romin, Laura A. and James A. Muck, 2002, "Utah Field Office Guidelines For Raptor Protection From Human And Land Use Disturbances." U.S. Department of Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.

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Parrish, Jimmie R., Howe, Frank, and Russell Norvell, 2001, "Utah Partners in Flight Avian Conservation Strategy." Utah Division of Wildlife Resources Publication Number 99-40.

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Wildlife Resources Code of Utah; Title 23, Utah State Code

APPENDIX 8

Spatial and Seasonal Wildlife Conservation Measures

Measures apply to operations that require use of heavy equipment, and not to casual use activities, including administrative and maintenance uses.

Common to All

Species	Season of Use	Value	Seasonal Restriction	Surface Use Restriction	Oil and Gas Category				
					No Action	Alt. A	Alt. B	Alt. C	Alt. D
Mule Deer/Elk	Winter	Crucial	12-1 to 4-15	1:1 Offsite mitigation required	Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	Mitigation must be of equivalent value and function
Mule Deer/Elk	Winter	High Value	12-1 to 4-15	NA	Special Stipulation	Open	Special Stipulation	Special Stipulation	Special Stipulations
Mule Deer/Elk	Winter	Substantial	NA	NA	Open	Open	Open	Special Stipulation	Special Stipulations
Mule Deer/Elk	Winter	Limited	NA	NA	Open	Open	Open	Special Stipulation	Special Stipulations
Mule Deer/Elk	Fawning/ Calving	Crucial	5-15 to 7-5	No Surface Occupancy with Special Stipulations	Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy with Special Stipulations
Mule Deer/Elk	Fawning/ Calving	Crucial	5-15 to 7-5	NA No Surface Occupancy	Special Stipulation	Open	Special Stipulation	Special Stipulation	No Surface Occupancy
Pronghorn	Fawning	Crucial	5-15 to 6-15	No Surface Occupancy	Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy
Pronghorn	Fawning	Curcial	5-15 to 6-15	NA	Special Stipulation	Open	Special Stipulation	Special Stipulation	No Surface Occupancy
Bighorn/ RM and D	Yearlong	Crucial	4-15 to 6-15	1:1 Offsite Mitigation required	Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	No surface Occupancy
Bighorn/ RM and D	Yearlong	High Value	4-15 to 6-15	NA	Special Stipulation	Open	Special Stipulation	Special Stipulation	Special Stipulations
Moose	Yearlong	High Value	12-1 to 4-15	NA	Special Stipulation	Open	Special Stipulation	Special Stipulation	Special Stipulations

Raptor	Cliff Nesting Complex	Crucial	2-1 to 7-15	No surface occupancy within .5 miles of nests occupied within previous 3 years	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy	No surface occupancy depending upon species
Raptor	Known Nest Site	Crucial	2-1 to 7-15	No surface occupancy within .5 miles of nests occupied within previous 3 years	No Surface Occupancy	Special Stipulation	Special Stipulation	No Surface Occupancy	No surface occupancy depending upon species
Sage Grouse	Lek	Crucial	3-15 to 6-1	No surface occupancy on sage grouse leks (Impossible)	No Surface Occupancy	Special Stipulation	No Surface Occupancy	No Surface Occupancy	No surface occupancy
Sage Grouse	Nesting/ Brearing Complex	Crucial	4-1 to 7-15	(Impossible)	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy	No surface occupancy
Riparian-Wetland and Fisheries (NOTE: Fisheries needs to be addressed separately)	Intermittent and perennial streams	Crucial	NA	No surface occupancy within 330 feet or 100yr floodplain of streams with intermittent or perennial reaches	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy	No permitted surface occupancy within 330 feet of the centerline of the stream or within the 100-year floodplain of streams with intermittent or perennial reaches.

Riparian-Wetlands	Springs	Crucial	NA	No surface occupancy within 660 feet of springs	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy	No permitted surface occupancy; except for stream restoration projects and rangeland health
Neotropical Birds	Breeding Habitat	High Value	4-15 to 8-1?		Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	No permitted surface occupancy; except for stream restoration projects and rangeland health
White-tailed Prairie Dog	Colonies	Crucial	3-1 to 7-1		Special Stipulation	Special Stipulation	Special Stipulation	Special Stipulation	No surface occupancy
White-tailed Prairie Dog	Colonies	Crucial		Surface Occupancy Avoidance	Special Stipulation	Special Stipulation	Special Stipulation	No Surface Occupancy	No surface occupancy

APPENDIX 9

Emergency Stabilization and Rehabilitation Program Definitions

Emergency Stabilization	Rehabilitation	Restoration
Planned actions within one year of a wildland fire to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources.	Post-fire efforts (<3-years) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire.	The continuation of rehabilitation beyond the initial three years of rehabilitation funding or the repair or replacement of major facilities damaged by the fire. Restoration is funded using appropriated or supplemental funding (for DOI form other than the wildland fire appropriation).
Seeding/mulching to prevent erosion Seeding to prevent permanent impairment of critical habitat for Federal and state listed, proposed or candidate threatened and endangered species Seeding to prevent establishment of invasive plants Structural measures to slow soil and water movement Stabilize critical heritage resources Protective fences or barriers to protect treated or recovering area Replacing/repairing (minor) facilities essential to public health and safety Conducting assessments of habitat and significant heritage sites in those areas affected by emergency stabilization treatments Patrolling, camouflaging, burying signigicant heritage sites to prevent looting Increasing road drainage frequency and/or capacity to handle additional post-fire runoff	Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, regenerating Indian trust commercial timberland Repair damage to minor facilities (campgrounds, exhibits, fences, guzzlers, etc.) Habitat restoration Invasive plant treatment Road/trail maintenance Heritage site restoration Fence replacement	Replacement of major infrastructure (visitor center, residences, administration offices, work centers) burned in the fire Watershed restoration

APPENDIX 10

Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah.

Introduction

In America's West, rangelands are the dominant landscape. Sometimes overlooked and under-appreciated, rangelands contribute significantly to the quality of life of residents and visitors alike. BLM's 200 million + acres of rangeland have long been valued for livestock grazing and mining, but rangelands now are also prized for their recreation opportunities, wildlife habitats, watershed, cultural values, and scenery.

During the western migration of the mid and late 1800s, rangelands attracted settlers who wanted to build a new life of ranching, farming, business, and mining. As settlement continued, competition for land and water intensified. Land was put to uses that were not sustainable over the long term, and insufficient thought was given to future needs.

With time, competing interests have changed and intensified. Over the past 125 years, significant public values have been placed at risk. Irreplaceable topsoil has been lost, habitats are diminished, and clean water supplies are coming into question. A new focus is emerging from this continuing uncertainty, one that looks at sustainability of ecosystems rather than production of commodities. The land itself is in jeopardy, and the variety of products and values that this land has produced may not be sustained for future generations of Americans unless ecosystems are healthy and productive.

It is time for a change, and BLM is changing to meet the challenge. BLM is now giving management priority to maintaining *functioning ecosystems*. This simply means that the needs of the land and its living and nonliving components (soil, air, water, flora, and fauna) are to be considered first. Only when ecosystems are functioning properly can the consumptive, economic, political, and spiritual needs of man be attained in a sustainable way. To achieve these ends, BLM has developed the following Fundamentals of Rangeland Health and their companion rules-Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah.

Fundamentals of Rangeland Health

As provided by regulations, developed by the Secretary of the Interior on February 22, 1995, the following conditions must exist on BLM Lands:

(a) Watersheds are in, or making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energyflow,are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
(c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving established BLM management objectives such as meeting wildlife needs.
(d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category I and 2 Federal candidate and other special status species.

In 1997, the BLM in Utah developed rules to carry out the Fundamentals of Rangeland Health. These are called Standards for Rangeland Health and Guidelines for Grazing Management. Standards spell out conditions to be achieved on BLM Lands in Utah, and Guidelines describe practices that will be applied in order to achieve the Standards.

Standard 1. Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.
As indicated by:

a) Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.
b) The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.
c) The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community [DPC], where identified in a land use plan, or (2) where the DPC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Standard 2. Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform.
As indicated by:

a) Streambank vegetation consisting of, or showing a trend toward, species with root masses capable of withstanding high streamflow events. Vegetative cover adequate to protect stream banks and dissipate streamflow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.
b) Vegetation reflecting: Desired Plant Community, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover and other habitat needs for dependent animal species.
c) Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency and roughness appropriate to landscape position.
d) Active floodplain.

Standard 3. Desired species, including native, threatened, endangered, and special-status species, are maintained at a level appropriate for the site and species involved.
As indicated by:

a) Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.
b) Habitats connected at a level to enhance species survival.
c) Native species reoccupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of nonnative species.
d) Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community [DPC], where identified in a land use plan conforming to these Standards, or (2) where the DPC is identified a community that equally sustains the desired level of productivity and properly functioning ecological processes.

Standard 4. BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM Lands will support the designated beneficial uses described in the Utah Water Quality Standards (R.317-2) for surface and groundwater *(BLM will continue to coordinate monitoring water quality activities with other Federal, State and technical agencies).*
As indicated by:

a) Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters.
b) Macro-invertebrate communities that indicate water quality meets aquatic objectives.

Guidelines for Grazing Management

1. Grazing management practices will be implemented that:
   a) Maintain sufficient residual vegetation and litter on both upland and riparian sites to protect the soil from wind and water erosion and support ecological functions;
   b) Promote attainment or maintenance of proper functioning condition riparian/wetland areas, appropriate stream channel morphology, desired soil permeability and infiltration, and appropriate soil conditions and kinds and amounts of plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow.
   c) Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow;
   d) Maintain viable and diverse populations of plants and animals appropriate for the site;
   e) Provide or improve, within the limits of site potentials, habitat for Threatened or Endangered Species;
   f) Avoid grazing management conflicts with other species that have the potential of becoming protected or special status species;
   g) Encourage innovation, experimentation and the ultimate development of alternatives to improve rangeland management practices;
   h) Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the Standards.
2. Any spring or seep developments will be designed and constructed to protect ecological process and functions and improve livestock, wild horse and wildlife distribution.
3. New rangeland projects for grazing will be constructed in a manner consistent with the Standards. Considering economic circumstances and site limitations, existing rangeland projects and facilities that conflict with the achievement or maintenance of the Standards will be relocated and/or modified.

4. Livestock salt blocks and other nutritional supplements will be located away from riparian/wetland areas or other permanently located, or other natural water sources. It is recommended that the locations of these supplements be moved every year.
5. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands non-intrusive, nonnative plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, can not achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established native species.
6. When rangeland manipulations are necessary, the best management practices, including biological processes, fire and intensive grazing, will be utilized prior to the use of chemical or mechanical manipulations.
7. When establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience is to be considered. Aesthetic and scenic values, water, campsites and opportunities for solitude are among those considerations.
8. Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein, and other supplements) for the purpose of substituting for inadequate natural forage will not be conducted on BLM lands other than in (a) emergency situations where no other resource exists and animal survival is in jeopardy, or (b) situations where the Authorized Officer determines such a practice will assist in meeting a Standard or attaining a management objective.
9. In order to eliminate, minimize, or limit the spread of noxious weeds, (a) only hay cubes, hay pellets, or certified weed-free hay will be fed on BLM lands, and (b) reasonable adjustments in grazing methods, methods of transport, and animal husbandry practices will be applied.
10. To avoid contamination of water sources and inadvertent damage to non-target species, aerial application of pesticides will not be allowed within 100 feet of a riparian/wetland area unless the product is registered for such use by the EPA.
11. On rangelands where a standard is not being met, and conditions are moving toward meeting the standard, grazing may be allowed to continue. On lands where a standard is not being met, conditions are not improving toward meeting the standard or other management objectives, and livestock grazing is deemed responsible, administrative action with regard to livestock will be taken by the Authorized Officer pursuant to CFR 4180.2(c).
12. Where it can be determined that more than one kind of grazing animal is responsible for failure to achieve a Standard, and adjustments in management are required, those adjustments will be made to each kind of animal, based on interagency cooperation as needed, in proportion to their degree of responsibility.
13. Rangelands that have been burned, reseeded or otherwise treated to alter vegetative composition will be closed to livestock grazing as follows: (1) burned rangelands, whether by wildfire or prescribed burning, will be ungrazed for a minimum of one complete growing season following the burn; and (2) rangelands that have been reseeded or otherwise chemically or mechanically treated will be ungrazed for a minimum of two complete growing seasons.
14. Conversions in kind of livestock (such as from sheep to cattle) will be analyzed in light of Rangeland Health Standards. Where such conversions are not adverse to achieving a Standard, or they are not in conflict with BLM land use plans, the conversion will be allowed.

APPENDIX 11

San Rafael Resource Area RMP- Parcels Designated for Disposal Under Various Authorities

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: Parcels are isolated from the large blocks of federal land, by either land ownership pattern or physical features, and are difficult and uneconomic to manage.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
1	T. 17 S.R. 9 E. Section 9, NW4SW4, SE4SW4
2	T. 17 S.R. 9 E. Section 34, S2SW4
3	T. 18 S.R. 9 E. Section 3, Lots 1 & 2, SW4NE4 SE4SW4, NW4SE4
4	T. 18 S.R. 8 E. Section 21, NW4SE4
5	T. 18 S.R. 8 E. Section 21, N2NW4, SE4NW4 NE4SW4, SW4SE4
6	T. 18 S.R. 8 E. Section 20, NE4NE4
7	T. 18 S.R. 8 E. Section 23, SE4SE4 Section 26, NE4NE4
8	T. 18 S.R. 8 E Section 12, E2SE4 T. 18 S.R. 9 E. Section 7, N2SW4, SE4SW4 SW4SE4 Section 18, N2NE4
9	T. 18 S.R. 9 E. Section 10, E2NE4
10	T. 18 S.R. 9 E. Section 9, SE4, E2SW4
11	T. 18 S.R. 9 E. Section 17, W2SE4 Section 20, NW4NW4, NW4NE4
12	T. 18 S.R. 9 E. Section 20, S2NW4, SW4NE4
13	T. 19 S.R. 7 E. Section 14, NW4NE4, E2NW4
14	T. 19 S.R. 8 E. Section 7, Lot 2, NE4SW4, SW4SE4
15	T. 19 S.R. 8 E. Section 11, SE4SE4 Section 12, SW4SW4
16	T. 19 S.R. 8 E. Section 17, NW4NW4
17	T. 19 S.R. 8 E. Section 17, E2SW4
18	T. 19 S.R. 8 E. Section 20, Lots 1-4, NE4SW4 Section 21, NE4, E2NW4, SW4NW4, NE4SW4, NE4SE4
19	T. 19 S.R. 8 E. Section 31, N2NE4, SE4NE4, SE4, E2SW4, SW4SW4 T. 20 S.R. 7 E. Section 1, N2, NESE4 T. 20 S.R. 8 E. Section 6, N2, N2S2, SE4SW4, SW4SE4 Section 7, W2NE4, NE4NW4
20	T. 20 S.R. 7 E. Section 4, SE4NE4
21	T. 20 S.R. 7 E. Section 27, NW4NW4
22	T. 20 S.R. 7 E. Section 12, SW4NE4, NW4SE4
23	T. 21 S.R. 6 E. Section 25, SE4SW4, S2SE4
24	T. 21 S.R. 6 E. Section 27, NW4NE4
25	T. 21 S.R. 6 E. Section 27, Lot 1, SW4NE4
26	T. 21 S.R. 7 E. Section 31, NW4SW4
27	T. 22 S. R. 6 E. Section 11, NE4NE4, SE4NW4
28	T. 22 S.R. 6 E. Section 14, SW4NW4, NW4SW4 Section 15, Lot 1
29	T. 22 S.R. 6 E. Section 18, SW4SE4 Section 19, W2NE4, NW4SE4

SRRMP Parcels Designated for Disposal Under Various Authorities (Continued)

Authorities: Various, including Section 203(a)(1) of FLPMA (community expansion).

Rationale: Because of their higher elevation, these lands would serve purposes such as infrastructure needs and related large-scale development that could not be met on nonfederal lands. Disposal of these lands would be limited to these purposes.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
30	T. 19 S.R. 7 E. Section 26, S2SW4 Section 35, W2NW4, NW4NE4NW4
31	T. 19 S.R. 7 E. Section 35, S2NE4NW4, NE4NE4NW4
32	T. 22 S.R. 6 E. Section 4, Lot 6
33	T. 22 S.R. 6 E. Section 4, Lots 5 and 7

(NOTE: Lots 5 & 6 ROW issued to Emery Water Facility)

Authorities: Parcel managed for disposal under available disposal authorities, including Section 203(a)(3) of FLPMA (community expansion)

Rationale: An old barn and parts of three newer homes were constructed in trespass on this parcel, which is within Emery city limits. Disposal of this parcel would be limited to the landowners in trespass.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
34	T. 22 S.R. 6 E. Section 4, parcel 37 (ROW issued to Emery Water)

Authorities: Various, including Section (203)(a)(3) of FLPMA (economic development)

Rationale: Utah Power and Light Company (UP&L) has indicated interest in purchasing these lands to use in conjunction with operation of the Huntington and Hunter Power Plants. UP&L identified these lands because of their location in relation to existing facilities. Disposal of these lands would be limited to UP&L or their successors for this purpose only.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
35	T. 19 S.R. 8 E. Section 22, SE4NE4, E2SE4, SW4SE4, SE4SW4 Section 27, NE4, E2NW2, E2SE4, SW4SE4

SRRMP Lands Presently Classified for Lease or Disposal

Lands presently classified for lease or disposal under the R&PP Act of 1926

Parcel	Legal Description	Current Use, Expiration Date
1	T. 18 S.R. 8 E. Section 35, NE4NW4 NE4, N2SE4	U-22940 - Castle Dale City Fairgrounds. ~~Expires: 09-11-1995~~ EXPIRED
2	T. 19. S. R. 7 E. Section 35, SE4	U-29388 - Emery County/ Clawson Motocross. ~~Expires: 08-18-1995~~ EXPIRED
3	T. 20. S.R. 6 E. Section 12, S2SW4NE4 N2NW4SE4	U-53817 - Ferron City/Millsite S.P. Expires: 05-27-2005
4	T. 20 S.R. 6 E. Section 7, Lots 3, 4 Section 12, Lots 3, 4 W2W2NE4SW4 NW4NW4SE4SW4	U-54668 - Ferron City/ Millsite Golf Course. Expires: 12-07-2011

Lands presently leased for airport use under the Act of May 24, 1928, and designated for patent under Airport and Airways Improvement Act or similar authority.

Parcel	Legal Description	Current Use, Expiration Date
1	T. 17 S.R. 9 E. Section 9, W2NE4, SE4NE4, E2NW4, SW4NW4, NW4SE4, NE4SW4	SL-068958 – Emery County/ Huntington Airport Expires: 08-23-2011

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Price River Resource Area MFP- Parcels Designated for Disposal Under Various Authorities

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: The lands listed below contain a small riparian area which consists of approximately 0.1 mile of the Price River near Wellington. This is the only conflict with their disposal. These lands are also part of a larger isolated tract that has been identified as a management problem for several years, particularly in terms of unauthorized dumping.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
1	T. 15 S., R. 11 E., Section 7, Lot 4, SE4SW4.

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: The lands listed below are considered to be high priority antelope range; however, the antelope population is small and the lands are not often used. This isolated parcel has been identified as a management problem for several years, particularly from the standpoint of unauthorized grazing and trash dumping.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
2	T. 17 S., R. 10 E., Section 1, Lots 2, 3, 4, S2N2,SW4.

Authorities: Various, including Section 206 of FLPMA and the R&PP Act of 1926.

Rationale: The following lands are critical winter range for deer and elk. The Utah Division of Wildlife Resources (UDWR) has expressed an interest in obtaining title to the lands, requesting acquisition through the R&PP Act. If UDWR decides not to acquire the lands, they should only be considered for disposal through an exchange where similar value wildlife habitat could be obtained.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
3	T. 14 S., R. 8 E., Section 21, SW4SW4; Section 29, NE4NE4.

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: The following lands contain significant amounts of sand and gravel. There are either presently permits for the removal of gravel from these lands or applications have been received to purchase gravel. Disposal of the surface prior to removal of the gravel could interfere with mining and vice versa. The estimated monetary return from the sale of the gravel is expected to exceed the surface value.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
4	T. 15 S., R. 11 E., Section 17, W2,SW4SE4, Lot 3; T. 16 S., R. 10 E., Section 9, N2; Section 10, NW4,N2SW4.

PRRA MFP- Parcels Designated for Disposal Under Various Authorities (continued)

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: There are no known resource conflicts with disposal of the following lands. However, disposal, particularly sale, of some of the larger blocks in T. 16 S., R. 10 E. would eliminate some small grazing allotments which could have a significant negative impact on a few grazing permittees.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
5	T. 12 S., R. 10 E., Section 22, N2SW4
6	T. 12 S., R. 13 E., Section 15, S2SW4
7	T. 13 S., R. 9 E., Section 12, NE4NE4
8	SW4NE4
9	Section 13, NE4.
10	T. 13 S., R. 10 E., Section 7, Lot 11
11	E2SW4
12	Section 8, Lot 4
13	Section 17, S2NW4
14	S2
15	Section 18, Lot 1
16	Lot 2
17	S2NE4
18	E2NW4
19	T. 14 S., R. 12 E., Section 15, W2NW4
20	T. 15 S., R. 11 E., Section 7, S2SE4
21	Section 8, S2SW4
22	T. 15 S., R. 13 E., Section 1, Lot 4
23	Section 17, NW4SW4
24	Section 18, NE4SE4
25	W2SE4
26	T. 16 S., R. 10 E., Section 3, Lot 4
27	SW4NW4
28	N2NW4SW4
29	Section 4, Lot 1
30	Lot 2
31	Lot 3
32	Lot 4
33	NW4SW4
34	N2NE4SE4
35	Section 5, N2SE4
36	SW
37	SW4SE4
38	Section 8, N2
39	NE4SW4
40	NW4SE4
41	N2SE4SW4
42	N2SW4SE4
43	Section 11, S2NE4
44	S2NW4
45	SW4
46	W2SE4

PRRA MFP- Parcels Designated for Disposal Under Various Authorities (continued)

Parcel	Legal Description
47	T. 16 S., R. 10 E., Section 14, SE4NE4
48	Section 15, S2NW4
49	SW4
50	Section 22, NE4NW4
51	T. 16 S., R. 14 E., Section 3, Lot 2
52	Section 9, SW4NE4
53	T. 17 S., R. 9 E., Section 1, Lot 4
54	S2NW4
55	T. 20 S., R. 15 E., Section 36, Lot 5
56	T. 20 S., R. 16 E., Section 19, NE4NE4
57	SE4SE4
58	T. 21 S., R. 16 E., Section 4, Lot 5
59	Section 5, Lot 1
60	Lot 2
61	Lot 3
62	Lot 4
63	Lot 5
64	Lot 6
65	Lot 8
66	Lot 10
67	Lot 11
68	Lot 12
69	Lot 14
70	Lot 16

Authorities: Various, including Section 203(a)(1) of FLPMA.

Rationale: The lands listed below have all been identified as critical or high priority habitat for deer, elk and sage grouse at some time during the year. Some of the lands also contain small riparian areas. However, most of these lands are small isolated tracts that are difficult to manage.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
72	T. 12 S., R. 8 E., Section 3, Lot 1
73	Section 9, SW4NW4
74	SE4SW4
75	Section 10, NW4NW4
76	Section 17, S2NE4
77	S2NW4
78	Section 18, Lot 1
79	Lot 2
80	S2NE4
81	SE4NW4
82	NE4SE4
83	Section 27, SE4NE4
84	Section 34, Lot 3
85	Lot 4
86	NE4NE4

PRRA MFP- Parcels Designated for Disposal Under Various Authorities (continued)

Parcel	Legal Description
87	T. 12 S., R. 12 E., Section 17, S2NE4
88	E2NW4
89	Section 21, SW4NE4
90	Section 29, SE4SE4
91	Section 33, SW4
92	W2SE4
93	Section 35, SE4
94	T. 13 S., R. 8 E., Section 4, NE4NE4
95	Section 8, SW4SE4
96	Section 9, N2NE4
97	SE4NE4
98	NE4SE4
99	Section 10, W2NW4
100	Section 16, NW4NE4
101	Section 20, NE4NE4
102	Section 21, NE4NW4
103	T. 13 S., R. 9 E., Section 7, E2NE4
104	Section 11, NE4
105	SW4
106	W2SE4
107	Section 14, S2NE4
108	NW4
109	N2SW4
110	SW4SW4
111	SE4
112	Section 15, NE4NE4
113	S2NE4
114	W2NW4
115	SE4
116	T. 13 S., R. 12 E., Section 13, SW4SW4
117	T. 13 S., R. 13 E., Section 26, SW4NE4
118	SE4NW4
119	SW4SE4
120	Section 27, NW4NE4
121	Section 33, SW4NW4
122	Section 35, NW4NE4
123	T. 14 S., R. 14 E., Section 8, SW4SE4
124	Section 17, SW4NW4
125	N2SE4
126	Section 24, NW4SW4
127	Section 25, NW4NW4
128	T. 14 S., R. 15 E., Section 8, SE4SE4
129	Section 28, E2NE4
130	Section 33, SE4SW4
131	N2SE4
132	SW4SE4
133	T. 15 S., R. 14 E., Section 7, S2NE4
134	NE4SE4
135	E2NW4SE4
136	E2SW4SE4
137	E2SE4

PRRA MFP- Parcels Designated for Disposal Under Various Authorities (continued)

Parcel	Legal Description
138	T. 15 S., R. 14 E., Section 8, Lot 5
139	Lot 6
140	Lot 7
141	SW4NE4
142	SE4NW4
143	E2SW4
144	NW4SE4
145	Section 17, Lot 1
146	W2NE4
147	E2NW4
148	Section 20, SW4NE4

Additional Parcels Designated for Disposal Under Various Authorities in the Price FO RMP

Authorities: Various, including Section 203(a)(1) of FLPMA (Community Expansion)

Rationale: The Castle Valley Special Service District of Emery County has expressed interest in acquiring this parcel since it is the only parcel of public land in the new Ferron City sewage pipeline and lagoon system. This parcel is isolated outside the fence line for the grazing allotment. Disposal of this parcel would be limited to this purpose.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
1	T. 20 S., R. 7 E., section 24, NE¼NE¼. T. 20 S., R. 8 E., section 19, Lot 1.

Authorities: Various, including lease and disposal under the R&PP Act of 1926

Rationale: This parcel is adjacent to the existing Ferron City/Millsite Golf Course and is desired in order to expand the Golf Course to 18 holes. Disposal of this parcel would be limited to this purpose.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
2	T. 20 S., R. 6 E., section 12, E½SE¼SE¼. T. 20 S., R. 7 E., section 7, W½SE¼SW¼,SW¼NE¼SE¼SW¼, W½SE¼SE¼SW¼,E½W½SE¼SE¼; section 18, Lots 1, 2, and 3.

Authorities: Various, including lease and disposal under the R&PP Act of 1926

Rationale: This parcel contains the historic Woodside Cemetery. Some Emery County residents desire to be buried there with their family members. Cemetery needs to be managed and maintained by an entity within the county structure. Disposal of this parcel would be limited to this purpose.

Note: All legal descriptions identify lands in the Salt Lake Meridian.

Parcel	Legal Description
3	T. 18 S., R. 14 E., section 9, NE¼NW¼SW¼.

APPENDIX 12

Areas Recommended for Withdrawal

Cleveland Lloyd Dinosaur Quarry (80 acres)	**San Rafael Canyon ACEC (upper and lower)**
Big Flat Tops ACEC	**San Rafael Reef ACEC (north portion)**
Bowknot Bend ACEC	**Swasey Cabin ACEC**
Copper Globe ACEC	**Developed Recreation Sites**
Pictographs ACEC	**Three Rivers Withdrawal**

APPENDIX 13

CRITERIA FOR LARGE GROUP AREA DESIGNATION

More likely to designate ⟶ Less likely

Rating/Criteria	I (Likely to be designated)	II (Possible designation)	III (Complex)	IV (Unlikely
Size and Access Sites must be at least ½ acre in size	Accessible from State Hwy, County Class B, BLM system road. Access by all weather road and oversize RVs.	Accessible from Class B or BLM system road. May not have all weather access.	Access by designated routes (not County or BLM system road) High clearance required	Access by wash or dirt track. Four wheel drive required.
Site resilience and resistance.	Site barren, largely unvegetated due to the nature of the substrate (wash bottom, slick rock, hard pan) or as a result of previous disturbance/activity such as construction, quarry, etc. Not subject high erosion or rutting when wet or extreme dust when dry.			Vegetated sites, Riparian sites, highly erodable or compactable soils, cryptobiotic cover etc.
ROS Class	U,R,RN,	SPM, high density area	SPM, low density of use. SPNM	SPNM, P
Resource Sensitivity within ½ mile of the site	Low resource sensitivity especially for critical resources: wilderness, cultural resources, T&E, paleo, Riparian, sensitive and critical wildlife habitats, critical, erosive soils. Designation would help protect a critical resource.	Low to Moderate sensitivity for critical resources. Route designation would have minor direct/indirect impact on critical resources	Moderate to high sensitivity. Route, with some minor design enhancement would not threaten a critical resource.	High sensitivity. Designation of route would impair one or more critical resources.
Rangeland Standards and Recreation Guidelines	Standards for rangeland health met. Route comports with recreation	Uplands or riparian functioning at risk. Route designation	Uplands or riparian functioning at risk and route designation	Condition non-functioning, or functioning at risk as a

	guidelines.	would work towards improving condition.	would not work towards improvement	result of OHV use on the route.
SRMA/ERMA Goals and objectives	Designation is consistent with goals and objectives.	Designation would be neutral in terms of meeting objectives.	Designation would tend to be non-conforming or not a "best fit." Mitigation may be needed.	Route designation would be in direct conflict with goals and objectives. *Do not designate unless objectives are modified.*
Conflict with other resource users (not just recreation, ranching, minerals development, forestry, military etc)	No Conflict	Minor conflict, temporal in nature, can be mitigated by users with minimal effort.	More direct conflict, not managed or mitigated without direct, BLM management action. *May designate only if conflict is mitigated.*	Direct, unmitigated, unmanaged conflict *May designate only if conflict is mitigated.*

APPENDIX 14 –

Evaluation Factors – Commercial, Competitive and Organized Group SRPs (Outside of Special Areas[1])

Sensitivity of the Site and associated features to Expected Uses and Impacts

-Soils and Vegetation

Low – Site and associated features demonstrate resilience and resistance to anticipated
Moderate – Site and associated features demonstrate some ability to resist/recover from impacts
High – Site and associated features demonstrate limited ability to resist/recover from impacts

-Associated Features (such as cultural, paleontological, visual, wildlife resources)

None – No associated features
Moderate – Some associated features present, existing protection is adequate
High – Resource conflict exists at the site

Potential Environmental Effects

Low	Effects of a temporary nature and surface disturbance of less than 1 acre
Moderate	Effects lasting less than one year, surface disturbance less than 5 acres
High	Effects lasting more than one year, surface disturbance more than 5 acres

Size of Area

Small	< 5 acres
Medium	5 to 40 acres
Large	> 40 acres

Exclusive Use Area

No	No exclusive use of any area will be required
Yes	An area of exclusive use will be required to support the permitted activity

Duration of Use

Short	One day or less
Moderate	Two to six days
Long	> six days

Anticipated Number of Participants/Vehicles

Low	<50 people	<25 vehicles
Medium	50 to 100 people	25 to 50 vehicles
High	>100 people	>50 vehicles

Competitive Event

Y	The event or activity is competitive in nature
N	The event or activity is non-competitive

Mechanical Equipment Required

Y	Vehicles or other mechanized equipment required in support of activity
N	No vehicles or other mechanized equipment required.

BLM Monitoring and Inspection Requirements

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1 *Special Areas are areas designated by Congress, the Secretary of the Interior, or BLM State Director where permits and fees may be required.*

None	No significant pre or post permit oversight activities required
Low	Pre or post permit activities require <8 hours BLM oversight
High	Pre or post permit activities require >8 hours BLM oversight

Permit Classification

Evaluation Factors	Permit Class			
	I	II	III*	IV*
Soils and Veg.	Low	Low/Moderate	Moderate	High
Assoc. Features	None	None/Moderate	Moderate	High
Env. Effects	Low	Low/Moderate	Moderate	High
Size	Small	Medium	Medium	Large
Exclusive Use	No	No	No	Yes
Duration	Short	Short/Moderate	Moderate	Long
Participants	Low	Low/Medium	Medium	High
Competitive	No	No	Yes	Yes
Mech. Equip .	No	Y or N	Y	Y
Monitoring and Inspection	None	None/Low	Low	High
Examples	Group Camping, Guided Hunting, Organized Groups, Scout Camporeees	Commercial River Rafting, Fat Tire Bike Fest, Van & Bus Tours on System Roads	OHV Tours, ATV Jamboree, Non-Motorized Competitive Events	Festivals, Motorized Competitive Events,

* - Class III and IV events are more likely to require cost recovery due to the probability of these events needing more than 50 hours of BLM staff time for permit administration.

Permit Types Allowed by ROS Class

ROS Class or SRMA/ERMA	Special Recreation Permit Class Allowed			
	I	II	III	IV
Primitive	Y	Y or N	N	N
Semi-Primitive Non Motorized	Y	Y or N	Y or N	N
Semi-Primitive Motorized	Y	Y	Y	N (Exceptions for travel through SPM on linear features)
Roaded Natural	Y	Y	Y	Y
Rural	Y	Y	Y	Y

Permit Types Allowed by SRMA

(Objectives and prescriptions in the Alternatives further define the allowability of SRPs in each SRMA)

SRMA/ERMA	Special Recreation Permit Class Allowed			
	I	II	III	IV
Desolation Canyon	Y	Y	N	N
Cleveland Lloyd Dinosaur Quarry	Y	Y	N	N
San Rafael Swell	Y	Y	Y	Y
Labyrinth Canyon	Y	Y	Y	N
Nine Mile Canyon*	Y	Y	N	N

Price ERMA	Y	Y	Y	Y

*Under Alternatives where designated as an SRMA

APPENDIX 15

Recreation Opportunity Spectrum – Classification Standards

	Primitive	**Semi-Primitive Non-Motorized**	**Semi-Primitive Motorized**	**Roaded Natural**	**Rural**	**Urban**
Physical Setting						
Remoteness*	1 mile from any interstate, state, county, or BLM system roads or isolated by topography.	1 mile from interstate, state, county, or BLM system roads or isolated by topography.	¼ mile from interstate or state roads.	May include areas within 1 mile of interstate, state, county, or BLM roads.	No distance criteria.	No distance criteria.
Minimum Size*	5,000 acres	2,000 acres	1,000 acres	No size criteria.	No size criteria.	No size criteria.
Evidence of Humans	Essentially unmodified natural environment.	Natural setting with some subtle modifications.	Natural setting with moderate alterations.	Natural setting with easily noticed to dominant modifications.	Modified natural setting with dominant modifications continually noticeable.	Structurally dominated setting, with natural elements subordinate.
	Evidence of only non-motorized trails acceptable.	Evidence of non-motorized trails. Little or no evidence of motorized routes.	Strong evidence of motorized trails, routes and roads.	Strong evidence of maintained roads and highways.	Strong evidence of maintained roads and highways.	Strong evidence of maintained streets, roads and highways.
	Structures are very rare.	Structures are rare and isolated.	Isolated structures.	Scattered structures noticeable from travel routes.	Structures are readily apparent.	Structures are the dominant feature.
Social Setting						
User Density	Less than 6 parties encountered per day on trails. Less than 3 parties encountered in camping areas.	Less than 15 parties encountered per day on trails. Less than 6 parties encountered in camping areas.	Low to moderate encounters with other parties.	Moderate to high frequency of encounters with other parties.	High frequency of encounters with other parties	Near constant encounters with other parties.
Managerial Setting						
Managerial Presence	Very low levels of on-site management.	On-site management is present, but subtle.	On-site management is present, but subtle.	On-site management is noticeable, but designed to blend with the natural environment.	On-site management obvious and numerous, frequently blending with the natural environment.	On-site management obvious and numerous.

* Distances and minimum sizes are for general reference only. Actual minimum sizes and distances for each class may vary depending on topography and adjacent ROS class.

APPENDIX 16

TO ALL SURFACE-DISTURBING ACTIVITIES

This appendix lists by alternative surface stipulations referred to throughout this draft RMP and EIS. Surface stipulations would be appended, where applicable, to land use authorizations, permits, and leases issued on BLM administered lands.

DESCRIPTION OF SURFACE STIPULATIONS

The following Oil and Gas Leasing Stipulation Table shows resources of concern and stipulation/s including exceptions, modifications, and waiver by alternative.

Three surface stipulations could be applied to land use authorizations: (1) no surface occupancy (NSO), (2) timing limitation (TL), and (3) controlled surface use (CSU).

Areas identified, as NSO would be closed to placement of surface facilities such as oil and gas wells. NSO areas would be avoidance areas for location of public utilities and closed to new road construction.

Areas identified for TL stipulations would be closed to construction and developmental activities during the identified time frames. Timing limitation stipulation areas would be open to operational and maintenance activities, including associated vehicle travel, during the closed period unless otherwise specified in the stipulation.

Areas identified as controlled CSU would require proposals be authorized only according to the controls or constraints specified. Controls would be applicable to all surface use activities such as oil and gas development and operation, mineral material sales, and public utility location. CSU areas would be open to public utilities.

EXCEPTIONS, MODIFICATIONS, AND WAIVERS

Surface stipulations could be excepted, modified, or waived by the authorized officer. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation. The environmental analysis document prepared for oil and gas development (i.e., APDs, sundry notices) also would need to address proposals to exempt, modify, or waive a surface stipulation. To exempt, modify, or waive a stipulation, the environmental analysis document would have to show that (1) the circumstances or relative resource values in the area had changed following issuance of the lease, (2) less restrictive requirements could be developed to protect the resource of concern, and (3) operations could be conducted without causing unacceptable impacts. The environmental analysis document would also need to determine the need for an RMP amendment.

Oil and Gas Leasing Stipulation Table

Type of Stipulation	Seasonal Stipulation	Areas Where Stipulations Apply	Exception, Modification, Waiver
Within VRM II areas, surface disturbing activities would comply with BLM Manual Handbook 8431-1 to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract attention of the causal observer. Any change to the landscape must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.	Year long	Field Office Wide	**Exception**: Exempted are recognized utility corridors. Temporary exceedence may be allowed during initial development phases. **Modification**: None **Waiver**: None
Mule deer and elk crucial winter range would be closed seasonally.	December 12 to April 15	Crucial and high value winter ranges within controlled surface use areas.	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to deer and elk populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Mule deer and elk crucial fawning and calving areas would be closed seasonally.	May 15 to July 5	Crucial and high value fawning and calving areas within controlled surface use areas	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to deer and elk populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Pronghorn antelope crucial fawning areas would be closed seasonally.	May 15 to June 15	Crucial and high value pronghorn fawning areas within controlled surface use areas	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to pronghorn antelope populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Desert bighorn sheep and rocky mountain bighorn sheep crucial habitat would be closed seasonally.	April 15 to June 15	Desert bighorn sheep and rocky mountain bighorn sheep crucial and high value habitats within	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to desert bighorn sheep and rocky mountain

Type of Stipulation	Seasonal Stipulation	Areas Where Stipulations Apply	Exception, Modification, Waiver
		controlled surface use areas	bighorn sheep populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Moose high value habitat would be closed seasonally.	December 1 to April 15	High Value moose habitat within controlled surface use areas	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to moose populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Raptor crucial cliff nesting complex habitats would be closed seasonally.	February 1 to July 15	Controlled surface use areas	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and habitat conditions if activities will not cause undue stress to raptor populations or habitats. **Modification:** Season may be adjusted depending on climactic and range conditions. **Waiver:** None.
Known raptor nest sites would be closed seasonally.	February 1 to July 15	Known raptor nest sites within controlled surface use areas	**Exception:** Upon review and monitoring, the AO may grant exceptions due to climatic and range conditions if activities will not cause undue stress to raptor populations or habitats. **Modification:** Season may be adjusted depending on climactic and habitat conditions. Distance may be adjusted if natural features provide adequate visual screening. **Waiver:** None.
Sage Grouse Leks No Surface Occupancy would be allowed within ¼ mile of identified Sage Grouse Leks.	(March 1-May-31)	Sage Grouse Leks.	**Exception**: The Field Manager may grant an exception if an environmental analysis determines that the action, as proposed or conditioned would not impair the function or utility of the site for current or subsequent reproductive display, including daytime loafing/staging activities. **Modification**: The NSO area may be modified in extent, or substituted with a timing limitation, by the Field Manager if an environmental analysis finds that a portion of the NSO area is nonessential to site utility or function or that the proposed action could be conditioned so as not to impair the function or utility of

Type of Stipulation	Seasonal Stipulation	Areas Where Stipulations Apply	Exception, Modification, Waiver
			the site for current or subsequent reproductive display, including daytime loading/staging activities. The stipulation may also be modified if the proponent, BLM, State wildlife agency, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to sage grouse breeding activities and/or habitats. **Waiver**: This stipulation may be waived if, in cooperation with the State wildlife agency, it is determined that the site has been permanently abandoned or unoccupied for a minimum of 5 years; site conditions have changed such that there is no reasonable likelihood of site occupation for a subsequent minimum period of 10 years.
Sage Grouse Nesting Habitat. This area encompasses suitable sage grouse nesting habitat associated with individual leks. This stipulation will not take effect until direct and indirect impacts to suitable nesting cover exceeds 10 percent of the habitat available within 2 miles of the identified leks. Further development after this threshold has been exceeded, will not be allowed from April 15 through July 7. (Development can occur until 10 percent of the habitat associated with a lek is impacted, from then on, additional activity can occur from July 8 through April 14.)		Sage Grouse Nesting Habitats.	**Exception:** The Field Manager may grant an exception if an environmental analysis and consultation with the State wildlife agency indicates that the proposed action could be conditioned so as not to affect next attendance, egg/chick survival, or nesting success. An exception could also be granted if the proponent, BLM, and State wildlife agency negotiate compensation that would satisfactorily offset the anticipated losses of nesting habitats or nesting activities. Actions designed to enhance the long-term utility or survivability of suitable habitat may be exempted. **Modification**: The Field Manager may modify the size or the timing limitation area if an environmental analysis indicates the proposed action could be conditioned so as no to affect nest attendance, egg/chick survival, or nesting success. Timeframes may be modified if operations could be conditioned to allow a minimum of 70 percent of nesting attempts to progress through hatch. **Waiver:** This stipulation may be waived if the State wildlife agency determines that the described lands are incapable of serving the long-term requirements of sage-grouse nesting habitat and that these ranges no longer warrant consideration as components of sage-grouse nesting habitat.

Best Management Practices

Type of Stipulation	Seasonal Stipulation	Areas Where Stipulations Apply	Exception, Modification, Waiver
Surface disturbing proposals involving construction on slopes greater than 20% would include an approved erosion control strategy, topsoil segregation/restoration plan, and would be properly surveyed and designed by a certified engineer and approved by BLM prior to construction and maintenance.	Year long	Field Office Wide	**Exception**: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives surface occupancy in the NSO area may be authorized. Additionally a plan would be submitted by the operator and approved by BLM prior to construction and maintenance and include: ▪ An erosion control strategy ▪ GIS modeling ▪ Proper survey and design by a certified engineer. **Modification**: Modifications also may be granted if a more detailed analysis, i..e. Order I, soil survey conducted by a qualified soil scientist finds that surface disturbance activities could occur on slopes greater than 20% while adequately protecting areas from accelerated erosion. **Waiver**: None. .
660-foot buffer of no surface occupancy around natural springs.	Year long	Field Office Wide	**Exception:** An exception could be authorized if: (a) there are no practical alternatives (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. **Modification:** Spatial **Waiver:** None.
Buffer zones of no surface disturbance or no surface occupancy (excluding fence lines) would be required in areas equal to the 100-year floodplain or 100m (330 feet) on either side from the centerline, whichever is greater, along all perennial streams.	Year long	Field Office Wide	**Exception:** An exception could be authorized if: (a) there are no practical alternatives (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. **Modification:** Spatial **Waiver:** None.
Cultural resources inventories (including point, area, and linear features) would be required for all federal undertakings that could affect cultural resources or historic properties in areas of both direct and indirect impacts.	Year long	Field Office Wide	**Waiver of Inventory** • Although complete Class III inventories would be performed for most land use actions, a field manager could waive inventory for any part of an Area of Potential Effect when one or more of the following conditions exist: • • Previous natural ground disturbance has modified the surface so extensively that the likelihood of finding cultural properties is negligible. (Note: This is not the same as being able to document that any existing sites may have been

Type of Stipulation	Seasonal Stipulation	Areas Where Stipulations Apply	Exception, Modification, Waiver
			impacted by surface disturbance; ground disturbance must have been so extensive as to reasonably preclude the location of any such sites.) • Human activity within the last 50 years has created a new land surface to such an extent as to eradicate locatable traces of cultural properties. • Existing Class II or equivalent inventory data are sufficient to indicate that the specific environmental situation did not support human occupation or use to a degree that would make further inventory information useful or meaningful. • Previous inventories must have been conducted according to current professionally acceptable standards. • Records must be available and accurate, and must document the location, methods and results of the inventory. • Class II "equivalent inventory data" should include an adequate amount of acreage distributed across the same specific environmental situation that is located within the study area. • Inventory at the Class III level has previously been performed, and records documenting the location, methods, and results of the inventory are available. Such inventories must have been conducted according to current professionally acceptable standards. • Natural environmental characteristics are unfavorable to the presence of cultural properties (such as recent landslides or rock falls). • The nature of the proposed action is such that no impact can be expected on significant cultural resources. • Conditions exist which could endanger the health or safety of personnel, such as the presence of hazardous materials, explosive ordnance, or unstable structures.
An assessment of fossil resources would be required on a case-by-case basis, mitigating as necessary before and/or during surface disturbance.	Year long	Field Office Wide	**Exception**: Exception may be granted by AO if area has previously been inventoried and assessment completed. **Modification:** **Waiver:**

APPENDIX 17

Standard Lease Form for Oil and Gas
Form 3100-11 (October 1992)

Sec. 1. Rentals - Rentals shall be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

(a) Noncompetitive lease, $1.50 for the first 5 years; thereafter $2.00;
(b) Competitive lease, $1.50, for the first 5 years; thereafter $2.00;
(c) Other, see attachment, or

as specified in regulations at the time this lease is issued.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties shall be paid on the production allocated to this lease. However, annual rentals shall continue to be due at the rate specified in (a), (b), or (c) for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) shall automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties - Royalties shall be paid to proper office of lessor. Royalties shall be computed in accordance with regulations on production removed or sold. Royalty rates are:

(a) Noncompetitive lease, 12 ½ %;
(b) Competitive lease, 12 ½ %;
(c) Other, see attachment; or

as specified in regulations at the time this lease is issued.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties shall be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production shall be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee shall not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor shall lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty in lieu of rental of not less than the rental which otherwise would be required for that lease year shall be payable at the end of each lease year beginning on or

after a discovery in paying quantities. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge shall be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (30 U.S.C. 1701). Lessee shall be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

Sec. 3. Bonds - A bond shall be filed and maintained for lease operations as required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage - Lessee shall exercise reasonable diligence in developing and producing, and shall prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee shall drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection - Lessee shall file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee shall keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee shall keep open at all reasonable times for inspection by any authorized officer of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee shall maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that supports costs claimed as manufacturing, preparation, and/or transportation costs. All such records shall be maintained in lessee's accounting offices for future audit by lessor. Lessee shall maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations - Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

Sec. 7. Mining operations - To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium - Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee shall include in any contract of sale of gas the provisions of this section.

Sec. 9. Damages to property - Lessee shall pay lessor for damage to lessor's improvements, and shall save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity - Lessee shall: pay when due all taxes legally assessed and levied under laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices; and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee shall comply with section 28 of the Mineral Leasing Act of 1920.

Lessee shall comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee, nor lessee's subcontractors shall maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease - As required by regulations, lessee shall file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which shall be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

See. 12. Delivery of premises - At such time as all or portions of this lease are returned to lessor, lessee shall place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessor for preservation of producible wells.

Sec. 13. Proceedings in case of default - If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation unless or until the leasehold contains a well capable of production of oil or gas in paying quantities, or the lease is committed to an approved cooperative or unit plan or communitization agreement which contains a well capable of production of unitized substances in paying quantities. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time. Lessee shall be subject to applicable provisions and penalties of FOGRMA (30 U.S.C. 1701).

Sec. 14. Heirs and successors-in-interest - Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.

APPENDIX 18

HYDRAULIC CONSIDERATIONS FOR PIPELINE CROSSINGS OF STREAM CHANNELS

Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand floods of extreme magnitude to prevent breakage and subsequent accidental contamination of runoff during high flow events. Surface crossings must be constructed high enough to remain above the highest possible stream flows at each crossing, and subsurface crossings must be buried deep enough to remain undisturbed by scour throughout passage of the peak flow. To avoid repeated maintenance of such crossings, hydraulic analysis should be completed in the design phase to eliminate costly repair and potential environmental degradation associated with pipeline breaks at stream crossings.

Surface Crossings

Pipelines that cross stream channels on the surface should be located above all possible flood flows that may occur at the site. At a minimum, pipelines must be located above the 100-year flood elevation, and preferably above the 500-year flood elevation. Procedures for estimating 100-year and 500-year flood magnitudes are described in the U.S. Geological Survey's National Flood Frequency Program (Jennings, et al. 1994). Two sets of relationships for estimating flood frequencies at ungauged sites in Utah are included in the NFF program: Thomas and Lindskov (1983) use drainage basin area and mean basin elevation for flood estimates for six Utah regions stratified by location and basin elevation. Thomas et al (1997) also use drainage area and mean basin elevation to estimate magnitude and frequency of floods throughout the southwestern U.S., including five regions that cover the entire state of Utah. Results from both sets of equations should be examined to estimate the 100- and 500-year floods, since either of the relations may provide questionable results if the stream crossing drains an area near the boundary of a flood region or if the data for the crossing approach or exceed the limits of the data set used to develop the equations.

Estimating the depth of flow, or conversely the elevation of the pipeline at the crossing, may be approached a number of ways. The simplest procedure would be based solely on a field reconnaissance of the site, using basic geomorphic principles. Identification of the bankfull elevation and the active floodplain (i.e., floodplain formed by the present flow regime) provides inadequate conveyance for extreme flood events. Past floodplains/present terraces also must be identified, since these represent extreme floods in the present flow regime, especially in arid and semi-arid environments. Pipeline crossings should be constructed to elevate the pipeline above the level of the highest and outermost terrace at the crossing. This level represents the geomorphic surface likely to be associated with the maximum probable flood. Since this method is entirely based on a geomorphic reconnaissance of the site, no flood-frequency analysis is required and no recurrence interval is assigned to the design elevation. While this is the simplest approach to design of the crossing, it likely will result in the most conservative estimate (i.e., highest elevation) for suspension of the pipeline.

A slightly more intensive approach to crossing design is based on the Physiographic Method described by Thomas and Lindskov (1983) for estimating flood depths at ungauged sites. The procedure utilizes regional regression equations (similar to the flood-frequency equations described above) to estimate depth of flow associated with a specified recurrence-interval flood. Flood depth is then added to a longitudinal survey of the stream channel in the vicinity of the crossing, resulting in a longitudinal profile of the specified flood. Elevation of the flood profile at the point of pipeline crossing is the elevation above which the pipeline must be suspended. While this procedure requires a field survey and calculation of actual flood depths, it may result in a lower crossing elevation (and possibly lower costs) for the pipeline. Also, since the regional regression equations estimate flood depth for specified recurrence-interval floods, it is possible to place a recurrence interval on the crossing design for risk calculations.

It may be possible to reduce pipeline construction costs associated with channel crossings even further with a water-surface-profile model of flow through the crossing site. The water-surface-profile model requires a detailed survey of both the longitudinal channel profile and several cross sections along the stream. Design flows (e.g., 100-year and 500-year floods) are calculated for the channel at the crossing (with the regional regression equations described above) and routed through the surveyed channel reach utilizing a step-backwater analysis. The step-backwater analysis uses the principles of conservation of mass and conservation of energy to calculate water-surface elevations at each surveyed cross section. Since the computation utilizes a detailed channel survey, it is probably the most accurate method to use; however, it is likely the most expensive method for the same reason. The step-backwater computations require an estimate of the Manning n-value as an indicator of resistance to flow, and assume fairly stable channel boundaries. Estimates of the n-value for ungauged sites are a matter of engineering judgment, but n-values typically are a function of slope, depth of flow, bed-material particle size, and bedforms present during the passage of the flood wave. Guidance is available in many hydraulic references (e.g., Chow 1959). The assumption of fairly stable channel boundaries is not always met with sand-bed channels, and is an issue of considerable importance for designing subsurface pipeline crossings as well (see below).

Subsurface (Buried) Crossings

Since many of the pipelines are small and most of the channels are ephemeral, it is commonplace to bury the pipelines rather than suspending them above the streams. The practice of burying pipelines at channel crossings likely is both cheaper and easier than suspending them above all flood flows; however, an analysis of channel degradation and scour should be completed to ensure the lines are not exposed and broken during extreme runoff events. Without such an analysis, pipeline crossings should be excavated to bedrock and placed beneath all alluvial material.

Buried pipelines may be exposed by stream bed lowering resulting from channel degradation, channel scour, or a combination of the two. Channel degradation occurs over a long stream reach or larger geographic area, and is generally associated with the overall lowering of the landscape. Degradation also may be associated with changes in upstream watershed or channel conditions impacting the water and sediment yield of the basin. Channel scour is a local phenomenon associated with passage of one or more flood events and/or site-specific hydraulic

conditions that may be natural or man-caused in origin. Either process can expose buried pipelines to excessive forces associated with extreme flow events, and an analysis of each is required to ensure integrity of the crossing.

Detection of long-term channel degradation must be attempted, even if there is no indication of local scour. Plotting bed elevations against time permits evaluation of bed-level adjustment and indicates whether a major phase of channel incision has passed or is ongoing. However, comparative channel survey data are rarely available for the proposed location of a pipeline crossing. In instances where a gauging station is operated at or near the crossing, it's usually possible to determine long-term aggradation or degradation by plotting the change in stage through time for one or more selected discharges. The procedure is called a specific gauge analysis and is described in detail in the Stream Corridor Restoration manual published by the Federal Interagency Stream Restoration Working Group (1998). When there is no gauging station near the proposed pipeline crossing, nearby locations on the same stream or in the same river basin may provide a regional perspective on long-term channel adjustments. However, specific gauge records indicate only the conditions in the vicinity of the particular gauging station and do not necessarily reflect river response farther upstream or downstream of the gauge. Therefore, it is advisable to investigate other data in order to make predictions about potential channel degradation at a site.

Other sources of information include the biannual bridge inspection reports required in all states for bridge maintenance. In most states, these reports include channel cross sections or bed elevations under the bridge, and a procedure similar to specific gauge analysis may be attempted. Simon (1989, 1992) presents mathematical functions for describing bed level adjustments through time, fitting elevation data at a site to either a power function or an exponential function of time. Successive cross sections from a series of bridges in a basin also may be used to construct a longitudinal profile of the channel network; sequential profiles so constructed may be used to document channel adjustments through time.

In the absence of channel surveys, gauging stations, and bridge inspection reports (or other records of structural repairs along a channel), it may be necessary to investigate channel aggradation and degradation using quantitative techniques described in Richardson et al. (2001) and Lagasse et al. (2001). Techniques for assessing vertical stability of the channel include incipient motion analysis, analysis of armoring potential, equilibrium slope analysis, and sediment continuity analysis. Geomorphic indicators of recent channel incision (e.g., obligate and facultative riparian species on present-day stream terraces elevated above the water table) also may be helpful for diagnosing channel conditions.

In addition to long-term channel degradation at the pipeline crossing, local scour of the crossing must be addressed for pipeline safety. Local scour occurs when sediment transport through a stream reach is greater than the sediment load being supplied from upstream and is usually associated with changes in the channel cross section. Local scour can occur in natural channels wherever a pipeline crosses a constriction in the channel cross section (contraction scour). Equations for calculating contraction scour generally fall into two categories, depending on the inflow of bed-material sediment from upstream. In situations where there is little to no bed-material transport from upstream (generally coarse-bed streams with gravel and larger bed

materials), contraction scour should be estimated using clear-water scour equations. In situations where there is considerable bed-material transport into the constricted section (i.e., for most sand-bed streams), contraction scour should be estimated using live-bed scour equations. Live-bed and clear-water scour equations can be found in many hydraulic references (e.g., Richardson and Davis 2001). In either case, estimates of local scour in the vicinity of the pipeline crossing must be added to the assessment of channel degradation for estimating the depth of burial for the crossing.

Even in the absence of contraction scour, local scour will still occur in most sand-bed channels during the passage of major floods. Since sand is easily eroded and transported, interaction between the flow of water and the sand bed results in different configurations of the stream bed with varying conditions of flow. The average height of dune bedforms is roughly one-third to one-half the mean flow depth, and maximum height of dunes may nearly equal the mean flow depth. Thus, if the mean depth of flow in a channel was 5 feet, maximum dune height could also approach 5 feet, half of which would be below the mean elevation of the stream bed (Lagasse et al. 2001). Similarly, Simons, Li and Associates (1982) present equations for antidune height as a function of mean velocity, but limit maximum antidune height to mean flow depth. Consequently, formation of antidunes during high flows not only increases mean water-surface elevation by one-half the wave height, it also reduces the mean bed elevation by one-half the wave height. Richardson and Davis (2001) report maximum local scour of one to two times the average flow depth where two channels come together in a braided stream.

Pipeline crossings that are buried rather than suspended above all major flow events should address all of the components of degradation, scour, and channel-lowering due to bedforms described above. In complex situations or where consequences of pipeline failure are significant, consideration should be given to modeling the mobile-bed hydraulics with a numerical model such as HEC-6 (U.S. Army Corps of Engineers 1993) or BRI-STARS (Molinas 1990). The Federal Interagency Stream Corridor Restoration manual (FISRWG 1998) summarizes the capabilities of these and other models, and provides references for model operation and user guides where available.

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APPENDIX 19

Price Field Office
Hydrologic Modification Standards for Roads

I. Surface Water Channel Crossing Criteria:

(1) Crossings which require a CWA-404 or GP-40 channel alteration permit, as determined by the Utah Division of Water Rights, are to be engineered if they are part of a federal Right of Way permit application.

(2) Channel crossings requiring culverts with individual or cumulative diameters of 30 inches or greater are to be engineered, and sized to the 25 year, 6 hour event at a minimum.

A. The commonly used sizing equations for culverts or other flow conveyances might not be reliable if there are no local precipitation stations from which to obtain accurate values. Isohyets are generated from available data. Often, the isohyet values given for remote areas have large errors associated with them. In such cases, run-off and stream flows should be obtained from hydrographs if available, measured directly if possible, or estimated based on channel dimension measurements.

(3) Wherever possible, roads should be aligned perpendicular to channels at crossings.

(4) Crossings on perennial channels which require structures or channel modification, including bank disturbance, are to be engineered. Crossings on intermittent and ephemeral channels may require engineering on a case by case basis.

(5) Culverts should connect a channel at existing points on both sides of the road. Realignment
of channels is strongly discouraged. If realignment is the only option, engineering shall be done to ensure channel parameters are preserved as described in I. (6) A, B, and C.

(6) Engineered designs will ensure that crossings do not cause changes to the existing channel parameters as follows:

A. Cross Sectional Dimensions: Changes to the cross sectional dimensions of a channel destabilize streams. An altered channel often undergoes a series of undesirable changes before restabilizing. Significant widening and downcutting can occur, followed by the formation of a new channel within the widened area. This process results in significant soil loss, degrading water quality. Local ground water levels are often lowered, which can cause changes in vegetation.

1. width, as measured at bankfull level: Factors which influence width are:

a. flow velocity: Velocity of flow exiting the crossing must equal velocity of flow entering the crossing. Where culverts are used, a 'V' shaped flow guide (i.e., wing walls) should be installed at the inlet. At the outlet, a 'U' shaped guide should be used to return flow to the original width, depth, and velocity. Also see criteria I. (6) A. 1. d. and I. (6) A. 2. b.

b. flow magnitude: Avoid changes in flow magnitude within the channel. Where a flood plain is present, flows from the flood plain must not be converged with channel flow. Each flood plain must be reestablished at the crossing outlet, with flow discharged at the same velocity, width, and depth as found immediately upstream of the inlet. Where culverts are used, the flood plains should have individually sized culverts, and each must be properly placed. Combination culvert/low-water crossings may be used, allowing flood level flows to go over the road. The same principles apply, differences in flow velocity on the flood plains must be considered in crossing designs. See I. (6) A. 2. a. and I. (6) A. 2. b.

c. size and type of transported sediment: Avoid creating changes in sediment load via use of erosion controls during construction and by replacing vegetation as soon after construction as possible.

d. bed and bank materials: Introduced bed and/or bank materials should have a friction coefficient similar to that of the natural channel, except where specifically designed to adjust flow velocity, and must be installed so as to withstand high flows and floods without dislodging.

2. depth, as measured from thalwag to bankfull level: The practice of installing culverts at a slope less than the natural channel bed slope to adjust flow velocity should be discontinued if changes to channel depth are to be avoided. This would also serve to reduce head at the inlet which can occur from the flow velocity change caused by the difference in culvert slope and bed slope.

a. Culverts should generally be installed with approximately ten percent of the diameter below the channel bed, provided rock or concrete aprons are included at the inlet and outlet, each flush with the original bed surface. Unless the bed is armored, both the inlet and the outlet must be installed at the existing bed level. Exceptions to this may be prescribed to reverse a preexisting downcutting problem without incurring additional costs.

b. Adjust flow velocity using an energy dissipating rock apron at the outlet.

B. Stream Channel Patterns:

1. radius of curvature: The following equation gives a relationship for the radius of curvature of meander bends to meander length and sinuosity.

$$R = L_m K^{-1.5} \div 13(K-1)^{0.5}$$

where: R = radius of curvature
L_m = meander length
K = sinuosity

and: $K = L_c \div L_v$; which may be approximated by $m_v \div m_c$

where: L_c = channel length
L_v = valley length
m_v = valley slope
m_c = channel slope

This relationship shows that parameters of a realignment can be made to mimic natural pattern geometry by adjusting channel slope and length within the realignment reach. It is necessary to design channel pattern changes (realignments) using the correct radius of curvature to avoid causing repercussions to the cross sectional dimensions. However, realignments should be made only if there are no alternatives. See I. (6) C. 1.

a. In cases where a channel must be realigned, the radius of curvature of the new alignment must equal the radius of curvature of the natural meander of the channel.

2. width/variable width, as a function of depth:

a. Width at bankfull of the new reach must equal width at bankfull of the original reach.

b. Banks must be contoured with the same slope as the original banks.

C. Stream Channel Profile:

1. slope of the channel bed: The bed slope is the single most sensitive physical parameter of a channel. When the bed slope changes, most or all other parameters of the pattern and cross sectional dimensions will change.

a. If possible, choose a crossing location low on the watershed, where the ground is relatively flat. See criteria I. (6) A. 2. a. and I. (6) A. 2. b.

2. pool-riffle ratio: At higher elevations in a watershed, the bed slope is generally greater and the channel is usually straighter (lower sinuosity). To compensate for low sinuosity, step pools and riffles develop at more frequent intervals. Pools occur where the bed slope is flatter, and riffles occur where the slope increases. Also, water seeps into the ground at pools, and discharges from the ground into the channel at riffles. If structures are built on riffles, water seepage could cause extensive damage and present potential safety risks.

a. Cross channels at pools, not at riffles.
b. Where roads must cross at riffles, in-seepage of water must be addressed in the design.

II. Road Drainage Criteria: Roads which run perpendicular to hill slopes act as berms, capturing sheet flow from runoff and snowmelt and converting it into channel flow along the road. This diverts water from areas immediately downslope of the road, which can cause undesirable changes in vegetation. Ditches which are typically built along roads to transport this channelized runoff are often discharged at the nearest existing wash, stream channel or low point on the terrain. Where this discharge occurs at a channel crossing (usually the downstream side of the crossing) severe erosion frequently results. Channels are significantly widened below such crossings, appearing "blown out". See Criteria 1. (6) A. 1. b. Also, road ditches often create severe erosion gullies by headcutting back from the wash. Where roads run parallel to channels, ditched runoff is often discharged or "turned-out" toward the channel at low points along the road. This frequently results in erosive headcuts forming from the channel to the road. This erosion degrades water quality, can destabilize the receiving channel, often erodes the road surface, and can block access along a channel. The type of damage described can be minimized or prevented with little additional cost incurred.

(1) Road drainage flow should not be converged with existing channel flow.

(2) Ditch turnouts should be made along the road at locations where terrain is fairly level along the road, and which slopes gently away from the road.

(3) Turnouts should be equipped with gravel or rock aprons at each outlet. The apron should:

A. expand outward away from the outlet for a distance sufficient to disperse channel flow from the ditch back into sheet flow

B. reduce flow velocity enough to prevent rill formation.

(4) Turnouts should be placed as needed to avoid transfering water from one drainage basin or subbasin to another, and to effect as complete a return to the original flow regime as practical. Spacing criteria as specified in the Class III road standards used by the PFO are the minimum standard.

III. Miscellaneous Construction Phase Criteria:

(1) For activities which disturb one (1) or more acres, a Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Utah Department of Environmental Quality.

(2) The Best Management Practices (BMP's) set forth in the Utah Nonpoint Source Management Plan for Hydrologic Modifications, Appendix B., page 3 should be implemented

as applicable.

(3) In the event construction can't be completed prior to winter closures, measures to prevent erosion from upcoming spring snowmelt should be taken as follows:

A. Loose earth and debris must be removed from drainages, and flood plains.

B. Earth and debris should not be stockpiled on drainage banks.

C. Road drainages should be checked to ensure there are none with uncontrolled outlets.

1. Be sure all ditch drainages have an outlet to prevent ponding.

2. If necessary, build temporary sediment ponds to capture runoff from unreclaimed areas.

3. Re-route ditches as needed to avoid channeling water through loosened soil.

APPENDIX 20

Basis and Rationale for Modification
of Surface Water, Ground Water, and Floodplain Protection Buffer Zones

In order to specify conditions whereby modifications to ground water protection buffers might be permitted on BLM managed floodplains and wetlands, it is necessary to establish what is meant by floodplains and wetlands in the context of legislation, and what values BLM is mandated to preserve by legislation.

Floodplain, Springs, and Wetland Values

- Wetlands are generally distinguished by the vegetation they support, which is sustained by a high water table and an interactive surface-ground water regime. Wetlands may include stream riparian areas, floodplains, wet meadows, spring and seep riparian areas, areas surrounding reservoirs, ponds, and lakes, etc. Wetlands are important for water quality, wildlife habitat, water retention and storage, and flow regulation. Wetlands of all types in upper watersheds are the most important factor for maintaining perennial stream flow.
- Floodplains are areas subject to wetting by flows in excess of stream channel capacity. Floodplains can be but are not necessarily wetlands. The vegetation on floodplains is often associated with a high water table. Vegetation helps regulate high flows, providing increased retention time for surface to ground water infiltration, and decreasing downstream floodstage. Floodplains are critical recharge zones for streams, and are vital physical components of channels. This is true whether a channel has continuous perennial surface flow, interrupted perennial surface flow, continuous intermittent flow, interrupted intermittent flow, or even ephemeral flow. (While not normally found, the presence of floodplains on an ephemeral channel is a strong indicator that the channel has degraded). While infiltration rates are frequently lower, ephemeral channels can also have direct flowpaths to ground water storage reservoirs of larger intermittent and perennial channels. Therefore, the distinction in values between ephemeral and non-ephemeral streams is not clear-cut. Water quality issues remain similar regardless of temporal flow regime. Indeed, channel erosion is more difficult to manage in ephemeral channels due to the lack of bank stabilizing riparian vegetation. When floodplains are not functioning properly, the associated stream channel is destabilized and subject to excessive bank erosion. As alluded to, the aerial extent of surface protection which a stream system requires to protect floodplain function and prevent water pollution is not fixed, but varies from stream to stream. The perimeter of a channel is normally saturated at some shallow depth beneath the surface, if not to the surface. How far this saturated zone extends varies by watershed, however the function is similar for all drainage systems (whether ephemeral, perennial, or otherwise). This saturated zone represents a direct hydrologic connection between surface and ground waters in a stream channel. If a stream is ephemeral, it means the water table (if any) is normally below the rooting depths of natural vegetation. If it is perennial, it means the water table is normally high enough to support native vegetation. During snowmelt and precipitation events, the water table extends laterally as well as vertically. The greatest lateral extent of saturation by the water table is the actual distance which must be protected alongside streams**.** This width is established by the wet season water table, is not arbitrary, and may be determined by physical measurements. The area occupied by the wet season water table is an area which is particularly vulnerable to water quality contamination, because a spill on the surface could quickly enter the ground water reservoir along the channel and spread rapidly downstream. Underground leaks which occur within the zone of the wet season water table would quickly spread downstream. Springs have similar water tables, however these are generally shaped differently. Rather than being linear along a stream, the saturated areas surrounding springs often include a large portion of the recharge zone, upslope of the spring. The discharge points of springs often form headwater tributaries of stream channels, therefore the downslope sides of springs often have a linear water table following the channel as in a stream. Regardless of shape, the water tables surrounding springs have similar water quality values to address. Determining the minimum buffer zone required to protect a given spring via physical measurements is possible, but often more complicated than for a stream channel.

Values such as critical wildlife habitat, density of archeological sites, and water rights (diversion points) are also important considerations within riparian zones.

1) Surface occupancy or permanent disturbance of wetlands should not be permitted. Modifications to this should not be considered.

2) Facilities located within the buffer zones of streams and springs must be isolated from surface and ground water flows.

a) The surface must be isolated from run-on. Overland flows from snow melt or precipitation must be diverted around the site and returned as dispersed overland flow, not as channelized flow, in such a manner as to prevent erosion.

b) All liquids must be isolated on the site, including precipitation.

c) The site must be isolated from ground water. Spills cannot be allowed to percolate into ground water.

3) Designs for facilities requiring modifications to must be submitted to BLM PFO and reviewed by appropriate staff specialists, including the hydrologist, riparian specialist, and and others as warranted, prior to approval.

Ground Water Protection Stipulation

Riparian areas – Surface disturbing activity is prohibited in non-functioning or functioning at risk riparian habitat. Surface disturbing activities may be permitted in properly functioning riparian areas provided functioning condition is not degraded. Such activity is predicated upon other applicable resource protection conditions being met as determined by BLM.

Wetlands – Surface disturbing activities is prohibited in wetlands, including wet meadows, as determined by BLM.

Stream channel beds - Surface disturbing activities are to be avoided on the land area overlying the wet-season water table of all stream channels as determined by physical investigation, the 100 year floodplain as mapped by FEMA or other sources to be verified by BLM, or 330 feet perpendicular to the centerline of intermittent and perennial, (including interrupted intermittent and perennial streams), whichever is appropriate for the situation. This may include channels which are in a degraded condition at the time of the proposed activity, but which have the potential to sustain a water table typical of intermittent and perennial streams. If the flow regime of a channel cannot be readily determined, the channel would be considered as having a water table above the channel bed, i.e. intermittent or perennial.

Springs - Surface disturbing activities are to be avoided on (1) the land area encompassed by a 660 foot radius from a spring discharge point, or (2) the recharge area of the spring as determined by physical investigation, in addition to a specified distance (to be determined on a case-by-case basis) from the discharge point.

APPENDIX 21

Fluid Mineral Reasonably Foreseeable Development

I. Introduction

The baseline Reasonably Foreseeable Development Scenario (RFD) presented here is based on a continuation of current management (no action alternative) as directed by BLM Handbook H-1624-1. The RFD projects the number of wells expected to be drilled in the planning area during the next 20 years on all lands (BLM, USFS, State of Utah and private). Reasonable assumptions, based on past and present activity, of surface disturbance for each well will be used to determine impacts from oil and gas activity for the no action alternative.

II. Past and Present Activity

The Price Field Office has a long history of oil and gas activity but interest has greatly accelerated during the past 15 years with the discovery of a large coalbed methane (CBM) resource in the Ferron Sandstone Member of the Mancos Shale. This interest in CBM also extended to other coal-bearing formations especially the Blackhawk Formation and the Emery Sandstone Member of the Mancos Shale. The geology of the planning area is described in the Mineral Potential Report (Booz, Allen, Hamilton, Inc., 2002). More recently, interest in the continuous and transitional gas resource in the Wasatch and Mesaverde formations as well as gas in some deeper formations has increased in the northeastern part of the planning area.

Details of past activity, listings of conventional oil and gas fields and cumulative production and statistics for recent drilling activity are included in section 3.2 of the Mineral Potential Report. Maps 16 and 21 of the Mineral Potential Report show the locations of existing CBM and conventional oil and gas fields respectively.

Numerous older seismic surveys have been conducted in the planning area. These have been concentrated along Highway 10 in Castle Valley, the Book Cliffs area around and east of Price and along Highway 6. Map 5 in the Mineral Potential Report shows the location of Federal oil and gas leases. Most of the leases are in the northern and western parts of the area. State of Utah oil and gas leases cover large blocks of State lands south of Price. Most of the central and eastern parts of the area are currently unleased. Special Tar Sand Areas cover large areas in the northern part of the planning area and in the central part of the San Rafael Swell and have had a negative impact on leasing because of the higher minimum bid and diligence requirements imposed by the Combined Hydrocarbon Leasing Act of 1981.

More than 1,400 wells have been drilled in the Price Field office. Table 1 shows the current status of wells in the Price Field Office. Most of the recent wells were drilled to produce coalbed methane (CBM) from the coals in the Ferron Sandstone member of the Mancos Shale in the Helper, Drunkards Wash, Huntington and Buzzard Bench areas. The Castlegate Field in the northern part of the area has produced CBM from coals in the

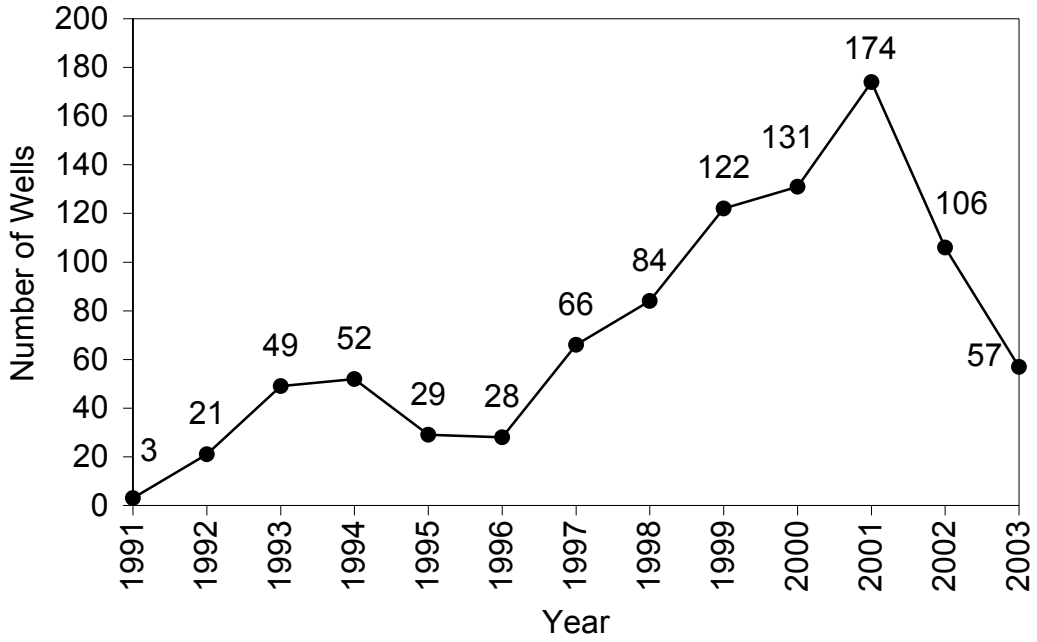
Blackhawk Formation. Drilling peaked in 2000 when 177 wells were spudded (Figure 1). The number dropped to 57 in 2003. During the period 2000-2003 only 3.2 percent of the wells drilled were dry (Utah Division of Oil, Gas and Mining). During this time period, almost all reported production was gas. As these statistics indicate, most of the wells are development CBM wells in the fields listed above and the decline in drilling in the past four years is a result of the maturing of the CBM fields. Interest in gas resources in the Wasatch, Mesaverde and deeper formations has increased recently in the northeast corner of the planning area. Bill Barrett Corp., as the operator of three units here, received 10 state permits and 3 Federal permits for Mesaverde tests in this area in 2002-2003 (Utah Division of Oil, Gas and Mining).

Table 1. Summary of Present Well Status.

Well Status	**Number of Wells**
Drilling	3
Producing Oil Wells	8
Producing Gas Wells	809
Shut in Oil Wells	13
Shut in Gas Wells	67
Service Wells (injection, disposal, monitor)	30
Shut in Service Wells	1
Temporarily Abandoned	12
Abandoned	19
Plugged and Abandoned	440
Total	**1,402**

Source: Utah Division of Oil, Gas and Mining.

Figure 1. Wells Drilled Per Year in the Price Field Office (1991-2003).



Source: Utah Division of Oil, Gas and Mining.

Total CBM production during 2002 reached 102,151,077 mcf, an increase of 10% over 2001 production (Figure 2 and Table 2). This increase is a function of new wells and the continuing dewatering process. Most of the individual wells in these fields exhibit a typical CBM production history characterized by high rates of water production initially followed by an increase in gas production accompanied by decreasing water production. The produced water is re-injected into deeper formations.

Figure 2. CBM Production Per Year in the Price Field Office (1987-2002).

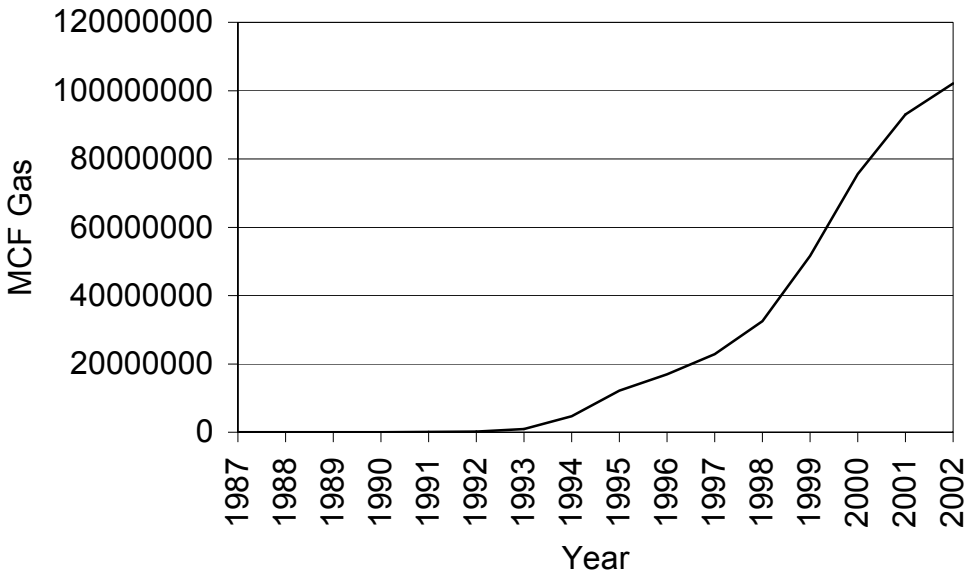


Table 2. CBM Production Per Year in the Price Field Office.

Year	CBM Production (MCF)
1987	8,884
1988	37,045
1989	0
1990	0
1991	76,098
1992	156,143
1993	904,731
1994	4,681,248
1995	12,206,608
1996	16,938,702
1997	22,883,343
1998	32,549,242
1999	51,658,926
2000	75,591,401
2001	93,043,290
2002	102,151,077

Renewed interest in the northeastern part of the planning area has resulted in an application for a 3-D seismic survey and APDs for several wells. Gas and small amounts of oil were produced from the Green River and Wasatch formations in the Peters Point and Stone Cabin Fields beginning in the 1950s. Interest is now focused on the continuous and transitional gas resources in the Wasatch and Mesaverde formations and

seismic surveys have identified drilling targets in deeper formations. Three Federal exploratory units have been designated in this area. The Price Field Office is currently conducting Environmental Analyses in the area resulting from proposals for a 3-D seismic survey and applications for permit to drill (APDs). Cumulative gas production from this area (Peter's Point, Prickly Pear and Stone Cabin Fields) is only 7,636,436 mcf (Utah Division of Oil, Gas and Mining).

In 2002, Carbon and Emery Counties ranked second and fifth respectively in gas production among Utah counties. Utah and the other Rocky Mountain gas producing states have become more integrated with the nation's natural gas system as a result of increased production and pipeline construction. The Kern River Pipeline crosses Utah diagonally from northeast to southwest and connects gas producing areas in Utah and southwestern Wyoming with consumers in southern Nevada and California. This pipeline was constructed in 1991 and significantly expanded in 2003 to a current capacity of 1.5 BCF per day (University of Utah Bureau of Economic and Business Research, 2003). Utah is now an overall exporter of natural gas and with the existing production and infrastructure, gas produced in the planning area should continue to reach an expanding market.

III. Oil and Gas Development Potential

Maps 27 and 28 in the Mineral Potential Report identify areas with a high potential for the occurrence of CBM and oil and gas respectively. Present activity is largely confined to development of the CBM resource in the Ferron Sandstone coals, often called the Ferron Fairway, and the continuous and transitional gas deposits in the Wasatch and Mesaverde formations in the northeastern part of the area (Tavaputs Plateau). Future development is expected to be concentrated in these same areas. The presence of the Sunnyside Special Tar Sand Areas in the Tavaputs Plateau region has negatively impacted oil and gas leasing here and legislation has been introduced to eliminate this classification or modify leasing procedures. If this, or similar, legislation is passed more exploration and development is possible in this area. Some exploration is likely to occur on the Wasatch Plateau testing the CBM resource contained in coalbeds in the Emery Sandstone Member of the Mancos Shale (Tabet and Quick, 2003). Significant exploration and development activity appears unlikely in other parts of the planning area.

Development drilling in the Ferron Fairway is on 160 acre spacing and there are no present indications that downspacing is likely. More innovative production drilling is likely involving horizontal holes from existing or new wells and inclined wells with multiple lateral legs ("herringbone pattern"). Overall, CBM drilling has declined during the past few years and it is unlikely that activity will return to the high levels of the period from 1999 to 2001. Utah Division of Oil, Gas and Mining statistics for 2003 show that 57 wells were drilled in Carbon and Emery Counties with the majority of these being CBM wells. The CBM fields appear to have reached a level of maturity where the significantly lower drilling rates will continue in the future discounting the possibility of major new drilling and recovery technologies or major sustained increases in natural gas prices. Available areas for expansion of activity in the Ferron Fairway are limited.

The Wasatch Plateau is in the Manti-La Sal National Forest where a significant number of oil and gas leases currently exist (Map 5 of the Mineral Potential Report). Some exploratory wells are likely in this area during the life of the plan. Coals in the Blackhawk Formation in the Wasatch Plateau appear to have little development potential (Mineral Potential Report, p. 80). As described above, coals in the Emery Sandstone Member of the Mancos Shale are a more likely exploration target in this area. A recent draft Mineral Potential Report covering the Fishlake National Forest (immediately southwest of the Manti-La Sal) projected few new wells for that Forest.

The northern part of the planning area includes the Book Cliffs CBM Play (USGS, 1995; Mineral Potential Report, 2002). The Castlegate Gas Field represents the only serious attempt to develop this resource to date. This field contained 19 active wells in October 2003 but has produced only 4,457,185 mcf of gas (Utah Division of Oil, Gas and Mining).

The remaining area with significant development potential is the Tavaputs Plateau area in the northeast corner of the planning area. Bill Barrett Corp. holds a block of leases in this area and is operator of three Federal exploratory units. Development is likely here when

EAs are completed for a 3-D seismic survey and several APDs. APDs have been filed for wells on both Federal and State of Utah lands. The target will be continuous and transitional gas deposit in the Wasatch and Mesaverde formations and possibly conventional gas occurrences in deeper formations. The Price Field Offices anticipates that a field development EIS will be undertaken if the initial group of proposed wells are successful. Existing wells and permit applications appear to be defining an 80 acre spacing for at least part of this area and the three units could accommodate approximately 550 wells. Topography will impact well location and a significant number of the wells would be directionally drilled which would reduce the surface impacts. The Vernal Field Office, immediately north of this area, includes a much larger portion of the Tavaputs Plateau region and projects 1,225 new wells during the next 15 years.

Notably absent from the above discussions is any mention of oil. During 2002 only 2,648 barrels of oil were produced in Carbon and Emery counties (Utah Division of Oil, Gas and Mining) and no significant oil production is expected in the future.

IV. Baseline Scenario Assumptions and Discussion

The baseline RFD is based on the continuation of current management and would apply to the no action alternative. Spacing of CBM wells is assumed to continue at 160 acres/well. An 80-acre spacing is projected for at least parts of the Tavaputs Plateau area. It is further assumed that natural gas prices will remain stable or increase gradually and that pipeline capacity will continue to be adequate to transport the produced gas. Table 3 shows projections for total new wells on BLM, USFS, State of Utah and Private lands over a 20-year time period.

Table 3. Number of Wells by Location Over 20-Years.

Well Location	**Number of Wells**
Emery/Book Cliffs Plays	700
Tavaputs Plateau	600
Remainder of Planning Area	240
Total	**1540**

It is anticipated that approximately 30 % of the new wells will be on State of Utah lands, 50 % on BLM lands, 10% in the Manti-La Sal National Forest and 10% on Private lands.

V. Disturbance Due to Oil and Gas Activity on All Lands

Projected Surface Disturbance

The following general guidelines for roads, drill pads, pipeline, and ancillary facilities were used to determine acres of surface disturbance associated with fluid minerals exploration and development activities. The assumptions are based on existing oil and gas development across the PFO.

Roads and Pipelines

- Average initial 70 feet total width disturbance for ¾ mile per well (6.4 acres).

- After reclamation, average disturbance of 20 feet total width disturbance for ¾ mile per well (1.8 acres).

Drill Pads

- Average initial disturbance of 1.5 acres including pits and cuts and fills per well.
- After reclamation, average disturbance of 1.0 acre per well.

Ancillary Facilities

- Average initial and long-term disturbance of 20 acres per facility (e.g. compressor stations and power lines).

Initial disturbance from roads, pipelines, and drill pads per well is estimated to be 7.9 acres and reclaiming to 2.8 acres per well for the life of the well. Table 4 and Table 5 show the initial and long-term surface disturbance by alternative directly associated with the number of oil and gas wells in Table 3.

Using the assumptions listed above (7.9 acres initially disturbed /well; reclaimed to 2.8 acres /well for the remainder of the well life) the following future initial and long term effects are calculated:

Initial Impacts: 12,366 acres

Long Term Impacts: 4,512 acres

Impacts from past and present activity are estimated at approximately 3,200 acres (after reclamation) and when added to projected future activity results in total disturbance of approximately 15,360 acres. Future initial impacts will be quickly reduced from 7.9 to 2.8 acres per well through reclamation of part of each drill pad resulting in a net total disturbance of approximately 8,000 acres.

Table 4. Initial Surface Disturbance from Oil and Gas Activity.

Type of Activity	Initial Surface Disturbance Per Year (Acres)	Initial Surface Disturbance Over 20 Years (Acres)
Roads and Pipelines	493	9,856
Drill pads	116	2,310
Ancillary Facilities	10	200
Total Surface Disturbance	**618**	**12,366**

Table 5. Long-Term Surface Disturbance from Oil and Gas Activity.

Type of Activity	Long-Term Surface Disturbance Per Year (Acres)	Long-Term Surface Disturbance Over 20 Years (Acres)
Roads and Pipelines	139	2,772
Drill pads	77	1,540
Ancillary Facilities	10	200
Total Surface Disturbance	**226**	**4,512**

APPENDIX 22.

CLASSIFICATION CRITERIA FOR WILD, SCENIC AND RECREATIONAL RIVER AREAS *

ATTRIBUTE	WILD	SCENIC	RECREATIONAL
Water Resource Development	Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.
Accessibility	Generally inaccessible except by trail. No roads, railroads or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality	Meets or exceeds Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria prescribed by the Wild and Scenic Rivers Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable Federal and State laws.	

* Table to be used only in conjunction with text.

APPENDIX 23

Energy Policy and Conservation Act (EPCA) Planning Considerations

Background of the EPCA inventory:

The President's comprehensive National Energy Policy issued in May 2001 directed the Secretary to "…examine land status and lease stipulation impediments to federal oil and gas leasing, and review and modify those where opportunities exist (consistent with the law, good environmental practice and balanced use of other resources).

Under this directive the Assistant Secretary for Lands and Minerals Management delivered to Congress an inventory of U.S. Oil and Gas resources in five western basins, as well as the extent and nature of any restrictions or impediments to their development. This report was prepared at the request of Congress under the provisions of the 2000 Energy Policy and Conservation Act.

In April 2003, the Bureau specified four EPCA Integration Principles as follows:

1. Environmental protection and energy production are both desirable and necessary objectives of sound land management practices and are not to be considered mutually exclusive priorities;
2. The BLM must ensure the appropriate amount of accessibility to energy resources necessary for the nation's security while recognizing that special and unique non-energy resources can be preserved;
3. Sound planning will weigh the relative resources values consistent with the Federal Land Management Policy Act;
4. All resource impacts, including those associated with energy development and transmission, will be mitigated to prevent unnecessary or undue degradation.

By July 29, 2003 the Bureau started to provide direction necessary to outline a strategy for integrating EPCA inventory results into land use plans.

How Price Field Office RMP Considered EPCA Inventory Information and Concerns

The northern portion of the Price Field Office is located partially within the Uinta/Piceance Study Area and the southern portion of the Field Office is within the Paradox/San Juan Study Area, two of the seven areas identified as priority basins in the EPCA inventory. The Price Field Office conducted an extensive review of the inventory data regarding energy resources within the planning area.

That data is profiled in the Price RMP and consists primarily of two types of information as outlined in EPCA; 1) data on oil and gas resources (volumetric data), and 2) data on leasing constraints. This data is considered an important part of our administrative record for the RMP.

The EPCA volumetric data is portrayed in the Affected Environment section of the EIS. The BLM also considered many other sources of energy related data including USGS and UGS information, industry information as well as some academic work completed on oil and gas plays and areas with potential for occurrence of mineral resources. This information is part of the more detailed Mineral Potential Report prepared in support of the planning effort.

In addition to the Mineral Potential Report, BLM prepared a projected Reasonable Foreseeable Development Scenario to project environmental impacts through the next 15 year period. Development projections included in-depth reviews of potential for occurrence, past well production, current well production, and future potential for production.

BLM also conducted additional support work regarding energy related management and energy benefits in the Management Situation Analysis (MSA) as well as the Socio-Economic Baseline Report which characterize the significant beneficial impacts of energy and mineral development for the Field Office.

Also, as part of EPCA, a review was provided outlining existing leasing constraints within the focus areas. Data on proposed and existing leasing constraints specific to the proposed Price RMP are provided in the minerals section of the alternatives matrix (Chapter 2).

APPENDIX 24

MULTIPLE USE REQUIRES MULTIPLE MANAGEMENT

Introduction
The Price Field Office of the BLM encompasses approximately 2.5 million surface acres of Public Lands. These are Federal public lands managed in the national interest, for not only the people in Carbon and Emery County, but for the people of the United States. Federal appropriated funds support management of these lands for multiple use. Guided primarily by the Federal Land Policy Management Act of 1976, (FLPMA) the BLM strives to maintain a balanced and efficient approach in managing these lands and land uses.

The Price Field Office includes a wide array of natural resources. Such resources include the vast San Rafael Swell, a geologic uplift leaving exposed, formations and paleontologic resources unmatched in the world. Mineral resources, including coal, oil, natural gas and coal bed natural gas are found beneath the surface in some areas. The wide open deserts and stark geologic formations provide stunning backdrops and impressive scenery. Vegetation in the area provides forage for domestic livestock and habitat for wildlife. Slot canyons draw hikers, rivers draw people seeking a boating adventure, and desert trails attract OHV enthusiasts. Vast lonely desert draws those seeking solitude and naturalness. Canyons provide open-air museums with ancient rock art adorning the walls and rocks scattered throughout. Truly the Price Field Office is a place of multiple resources and multiple uses.

The purpose of this appendix is to provide a summary of the multiple uses in the Price Field Office, and describe some of the management tools the BLM has available to balance these multiple uses. This appendix also seeks to answer the question of "why layer various management on top of one another on the same piece of land?" This appendix however, is not intended to describe in finite detail each management tool available that can be found in specific programmatic manuals and handbooks. This is only a summary that can assist in understanding within the context of the Resource Management Plan, general ideas about multiple uses and management.

What is Multiple Use
BLM's Planning Manual 1601 explains multiple use:

> *Land use plans ensure that the public lands are managed in accordance with the intent of Congress as stated in FLPMA (43 U.S.C. 1701 et seq.), i.e., under the principles of multiple use and sustained yield. As required by FLPMA, the public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals;*

and that will provide for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process. In addition, the public lands must be managed in a manner that recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands.

This is a pretty big charge, and a challenging one. In many places, this is an easy task. In some instances, areas suitable for livestock grazing are not attractive for recreation use, or areas with mineral resources are not suitable habitats for wildlife, or areas attractive for solitude are topographically isolated from other activities. In these cases, management for multiple use is relatively easy. The shear nature of the natural resources helps to avoid conflicts among uses.

Not all areas are that easy however. Consider for instance the Nine Mile Canyon area. This region includes habitats for wildlife. Rock art from ancient civilizations adorns the walls of the "World's Longest Museum." Below the surface of the ground are fluid mineral resources that can be extracted and provide important energy resources for the region. Still again, areas of the canyon are suitable for livestock grazing. Views in and through the canyon, including the cultural resources, attract recreationists. Among recreationists, some seek to enjoy the canyon in automobiles or off-highway vehicles, while others seek a quiet and reflective experience, void of noises and distractions from the modern world. All are valid uses of the land, but they are also mutually exclusive in some ways. Every single use outlined in FLPMA cannot take place on the same piece of land at the same time.

Other areas in the Price Field Office with conflicts among multiple uses include, but are not limited to, Desolation Canyon, the San Rafael Swell, the Book Cliffs, the I-70 corridor, areas surrounding towns in the region, river corridors, vegetative transition zones, overlapping wildlife habitats, scenic vistas, entrenched canyons, dispersed camping areas. Everywhere there are choices to make, and accommodations to be made in managing for the multiple uses of the Public Lands.

Uses of the public lands can **very** generally be viewed as extractive, scientific, or recreational:

- Extractive uses might include mining for mineral resources, harvest of vegetative resources and utilization of forage for livestock. These uses are important to local economies, regional and even national energy supplies, and management of vegetative communities for the health of the ecosystem, including wildlife and wildfires, and are also important in preserving the heritage of the American West with the ranching, homesteading and mining histories.

- Scientific uses might include exploring geologic features for an enhanced understanding of the earth and its history. Paleontologic resources can be studied to deepen understanding of prehistoric life and the continued evolution of the planet. Study of cultural and historic resources can augment our understanding of human interactions with nature, and one another.

- Recreation uses might include modern human interaction with the natural resources for pleasure and life-balance. Recreation takes different forms unique to each individual, and can vary from riding motorized off-highway vehicles through a desert canyon, to hiking a canyon rim, to paddling a canoe down Desolation Canyon, or riding a horse up the San Rafael Canyon in hopes of seeing some bighorn sheep, to touring the area in a motor-home. Each person seeking recreation on public lands has a different need and expectation for the setting.

Each of these general types of uses requires different management, as the interactions of each resource, the purposes for management, and the impacts of these activities are all very different.

What are the Management Tools

Management can generally be described as "guiding human behavior in a way that helps to achieve a desired outcome." As the agency charged with management of these public lands, the BLM authorizes and governs multiple use activities as directed by Congress through FLPMA and many other guiding laws.

Management actions are intended to guide human interaction and behavior in ways that allow for multiple use. BLM has developed a variety of tools for management of resources. Within BLM, there are programs designed to manage livestock grazing on public lands, programs for oil and gas development, programs for coal development, programs for paleontologic resource management, programs for recreation activities, programs for vegetative treatments, programs for managing wildfire, and the list goes on. If it can be done on public lands, there is probably a program for it.

As specialized programs are implemented, each applies certain management techniques for the specific resource.

How does it work

Each program, or in this context each aspect of multiple use, draws on a manual or handbook designed to manage for specific resources and uses. These manuals explain the context of a resource, how it is used, and what decisions can be made about that resource. These manuals are developed as laws and policies are applied by an executive agency.

One generally common element of each program is that management of the resource and resource use are central for the BLM. For each program, the land, or the resource, is the land. Each program will apply certain management decisions on specific pieces of land. As a result, each program will usually categorize or identify lands throughout the entire Field Office into one more management aspect. These approaches could be based upon topographical features such as streams, ridgelines, canyon rims, etc. Sometimes they are based upon political divisions, such as County boundaries. Still other times

they are based on features such as roads, fence lines, or other constructed features. These management areas however, are usually based upon the specific use or program. To fully understand this, below are few examples of how this would apply.
Grazing on public lands is guided primarily by the Taylor Grazing Act of 1934, with subsequent law and policy since that time. Accordingly, the Price Field Office is divided into grazing allotments. Allotment boundaries were developed using a combination of topographic, political, and constructed features. Generally, the allotments will be designed in a way that each will contain forage and water for grazing livestock, or allow an area for water to be developed. These allotment boundaries are designed specifically with livestock grazing in mind and for the most part, serve that function.

On the same land, and even using some of the same forage resources, wildlife are present. As wildlife are managed by the Utah Division of Wildlife Resources (UDWR), different management is applied. The Price Field Office, from a wildlife perspective, has identified the variety of habitats, for elk, mule deer, elk, bighorn sheep, with further considerations for the habitat values that are present. Additionally, UDWR maintains hunting units, identifying certain areas allowing UDWR to regulate harvest of game species within each area. These herd units do not follow grazing allotment boundaries. They serve different purposes for multiple uses on the land.

These same lands that have grazing management and wildlife management, also have mineral resources below the surface of the land. All public lands in the Field Office are managed with certain fluid mineral leasing direction. Therefore, all public lands in the Field Office are identified with one of four broad designations, each one determining how, where, and when mineral development may take place. These areas again do not follow grazing allotment boundaries. Nor do they follow big game hunting unit boundaries. Instead, the boundaries for mineral management are designed around and in providing access to the identified mineral resource.

On the very same lands, these multiple-use lands, where livestock grazing is taking place, wildlife are present, and there are sub-surface minerals; recreation is also taking place. The Price Field Office draws people to the area for the beauty of the desert, the backdrop of the canyons, and a variety of recreation experiences that go with the environment. People come to the area in motor homes for camping, tents for camping, and others backpack into areas more isolated, away from roads. Still others ride horses in the canyons, boat down the rivers, or ride off-highway vehicles on designated trails. In order to provide for quality recreation activities and recreation management, dispersed camping areas are identified, developed campgrounds are constructed, trails are designated for various uses, and facilities are provided to service river based recreation. These areas are not developed based upon grazing allotments, or wildlife herd units, or mineral designations, but instead are developed based on the topography of the land and the recreation needs associated with those lands.

On these same lands identified for multiple use, there are artifacts remaining from native and historic cultures. These artifacts include rock art sites, dwellings, lithic

scatter, abandoned cabins, mining adits, and a variety of other evidence of days gone by. These resources are the cultural and historic remains that offer both scientist and recreationists a look into the past, and into the human interactions of centuries before. Cultural resource sites are also classified into general management approaches which include conservation of the artifacts in place, to recreation and diverse interpretation opportunities. These designations are based upon a variety of criteria, including the type of cultural resource, its scarcity, level of protection required, and protecting the scientific study opportunities where most appropriate. These cultural site classifications are specific to just the cultural resources, and their setting. Therefore, the classifications do not follow grazing allotment boundaries, or wildlife herd units, or mineral leasing management, or even recreation, yet they occur and are managed on the same land where all these other resources and uses are occurring.

These are just a few examples of managing the multiple resources and uses, with a variety of management tools. Similar discussions could take place regarding visual resources, protection of watersheds, riparian areas, critical soils, paleontologic resources, forests and woodlands, fire management, and vegetation.

As noted, there are many resources and resources uses in the Price Field Office. This Resource Management Plan contains hundreds of specific decisions designed to manage these uses in ways that are complementary to one another, and attempts to resolve conflicts in places where multiple uses occur. Since not all of the multiple uses are totally compatible with one another, in some locations, one use will be given favor in relation to another use. One example of this may a range improvement such as a water facility for livestock instead of a developed campground. Another example may be designation of a trail for off-highway vehicle use so as to avoid a threatened species of cactus. Yet another example would be the location of a drill pad for mineral development away from a riparian habitat. In another location, a rock art site may be fenced from livestock to allow for better interpretive opportunities and protection of the artifacts. The main point is not all uses can take place on the same ground at the same time.

Why are some areas "layered"

So, the question then is presented, why does the BLM "layer" various management on the same pieces of land? The answer, multiple use requires multiple management tools. It would not serve the needs of grazing use to base allotment boundaries on recreation needs. Nor would it serve to protect irreplaceable cultural resources based upon wildlife hunting units. As a result, the appropriate management tools are applied to address management decisions specific to multiple resources and uses.

The table below provides a general outline of some of the management tools for a variety of resources.

Resource or Resource Use	**Management Tools**
Air Quality	Direct activities that can affect air quality
Soil, Water and Riparian	Buffer zones around water and riparian resources,

	guidelines for development (roads, mineral activity, range improvements, recreation facilities, etc…)
Vegetation	Areas open or closed for collection of vegetative commodities, identification of areas for vegetative treatments, areas identified for certain fire management regimes.
Cultural Resources	Sites identified for conservation for future use, public use, scientific use, traditional use, experimental use, or discharged from management.
Paleontology	Sites identified for interpretation, issuance of scientific permits, or designation of sites as Area of Critical Environmental Concern.
Visual Resources	Identification of Visual Resource Management (VRM) management objectives
Special Status Species	Identification of species or habitats, with protective management applied.
Fish and Wildlife	Herd unit, habitat delineation, seasonal activity management, etc…
Wild Horses and Burros	Identification of herd areas, herd management areas, and setting appropriate management levels (number of horses or burros).
Forestry and Woodlands	Areas open or closed for collection of forestry and woodland commodities, identification of areas for treatments, areas identified for certain fire management regimes.
Livestock Grazing	Determination of allotment boundaries, management according to the Rangeland Health Standards and Guidelines.
Recreation	Identification of Special Recreation Management Areas, Extensive Recreation Management Areas, high use areas, large group areas, and management for landscapes as described in the Recreational Opportunity Spectrum (ROS), designation of trails available for equestrian, motorized vehicle, and non-motorized uses, development of recreation facilities (campgrounds, dispersed camping areas, river access facilities, infrastructure, etc…)
Lands and Realty	Identification of lands available for disposal, lands recommended for withdrawal, areas identified for rights of way, etc….
Minerals and Energy Resources	Classification of lands for leasing, identification of lands available for mineral material disposal, and recommendations for lands for withdrawal from mineral entry.
Wilderness Study Areas	Wilderness Study Areas will be managed according to the IMP.

Areas of Critical Environmental Concern (ACEC)	ACECs are areas managed for protection of relevant and important values, from irreparable harm.
Wild and Scenic Rivers	Management of rivers recommended as suitable for inclusion in the National Wild and Scenic River System for protection of identified Outstandingly Remarkable Values within ¼ mile of the river corridor.
Transportation and Access	Identification of BLM system roads, coordination with counties in management of BLM and county roads, management of permitted activity (mineral development, grazing management) access roads.

Some examples of "layering" in the Price Field Office RMP

All lands in the Price Field Office are managed with a variety of management layers. This is in-line with the direction from Congress to manage the public lands for multiple use. To adequately address the multiple resources and multiple uses of the public lands, specific management tools are applied. All lands in the Price Field Office include at a minimum, the following management layers:

- Grazing Allotments
- Mineral Leasing Allocations
- Visual Resource Management
- Special or Extensive Recreation Management Areas
- Off-Highway Vehicle use designations (open, limited or closed)
- Wildlife habitats and herd management units
- Fire management applications

Other management layers apply to specific sites within the Field Office, for management of resources or resource uses that occur only in those areas:

- Wild horse and burro herd areas and herd management areas
- Cultural Resource site management
- Areas of Critical Environmental Concern
- Wilderness Study Areas
- Segments of rivers recommended as suitable for inclusion in the National Wild and Scenic Rivers system
- Recreation – high use areas and large group areas
- Lands recommended for withdrawal from mineral entry
- Lands open for collection of vegetative, forest or woodland products (seed collection, firewood collection, Christmas tree cutting, etc….)
- Identification of hobby fossil collection sites

Conclusion

The BLM is committed to managing public lands in the Price Field Office under the multiple use mandate from FLPMA. Multiple-use requires multiple management.

APPENDIX 25

COAL REPORT

Price Field Office

Resource Management Plan

Bureau of Land Management

125 South 600 West

Price, Utah 84501

Table of Contents

List of Tables

List of Figures

COAL RESOURCES

INTRODUCTION

Background

To assist the U.S. Bureau of Land Management (BLM) update its management plan for the Price Field Office, which covers Carbon and Emery Counties in Utah, the Utah Geological Survey (UGS) was asked to generate information on the remaining recoverable coal reserves in the area, and a reasonably foreseeable development scenario for those reserves. The UGS provided a database with the location and thickness at various coal measurement points, and information on previously mined areas, faulting, and natural and cultural features that might inhibit future mining that had been compiled for resource studies of the Book Cliffs and Wasatch Plateau coalfields (see Map 39) with funding from the U.S Geological Survey (USGS). Coal information for the Emery coalfield comes from an older resource study by the UGS (Doelling, 1972); an up-dated estimate of the available coal in the Emery coalfield (Map 39), although in progress, was not available at the time of the current BLM planning effort. BLM mining engineers provided the engineering parameters used by the UGS for its evaluation to derive the coal reserves that would be economic to mine under current, and reasonably foreseeable market conditions.

Study Methodology

This study was undertaken using ArcView software (version 3.2, Environmental Systems Research Institute [ESRI]) with ESRI's Spatial Analyst software extension running on a personal computer with a Windows NT operating system. This Geographic Information System (GIS) software allows for the simultaneous analysis of various combinations of resource parameters and the ability to easily repeat an analysis using different assumptions and parameters. Specific details related to the current GIS methodology employed follow.

Calculation of coal resources requires the determination of three parameters: the extent of minable coal in each bed (area), the distribution of the bed thickness in that area, and an estimation of the density of the coal. Maps showing the areal extent and thickness of identified coalbeds were constructed from scattered points of observation (drill hole records and outcrop measurements). ESRI's Spatial Analyst software extension allows the choice of different mathematical methods to interpolate between, and extrapolate beyond, point data to construct coal thickness maps of various individual coal beds. An inverse distance weighting method (set to examine the six nearest neighbors and use a fourth-order, distance-weighting function) was

selected to assign thickness values to individual 30-by 30-meter cells in a grid covering the areal extent of the Blackhawk Formation in the study area. The coal thickness information was combined with information on mined-out areas, faulting, depth of cover, and other technical and cultural features that would potentially limit future mining to define the remaining coal resources.

Using these various, individual, coal bed-thickness grid maps, polygonal areas were outlined with BLM engineering guidance to define the coal that would likely be economic to mine within the next 30 years. These polygonal areas generally had to contain coal thicker than seven feet, have overburden cover greater than 200 feet and less than 2,500 feet, and have resources that could be classified in the USGS "demonstrated" resource reliability category (Wood and others, 1983) for at least 80 percent of the resource area. The resulting grids of the areas likely to be mined in the next 30 years were converted from a floating-point (decimal) format to integer values. For example, all cells with coalbed thickness values greater than 7 but less than 8 feet were reclassified to the integer 7; for resource calculations we assign these cells a thickness of 7.5 feet of coal. This approximation significantly reduces the size of the resulting data sets and allows subsequent analyses to be undertaken in a reasonable amount of computation time (minutes rather than hours). Classification of coalbed thickness as integer data also allows convenient tabulation in Arcview of the areal extent of these thickness intervals; tables containing these data were exported to a spreadsheet for final calculation of the total tons of coal in each thickness interval. The coal resource calculations were accomplished by applying the USGS standard coal density factor for bituminous coal of 1,800 tons of coal per acre-foot (Wood and others, 1983).

For each of the resource areas identified for future mining in the Book Cliffs and Wasatch Plateau coalfields (map 39), the BLM mining engineers determined if it would be mined in the first or second 15-year period, and the recovery factor to apply to the identified resources to determine the recoverable reserves. Only general information is available at this time on the quality of the coal, or roof and floor conditions in the various minable tracts delineated. Specific information on the quality of the coal and roof and floor conditions in the various tracts would help identify areas with quality problems, or difficult mining conditions that might further restrict the recoverable coal in the delineated tracts. Some attempt to account for theses factors was made in applying slightly different recovery factors to some tracts. Future study of these economic aspects of the reserves identified is warranted, however, this present study identifies the maximum area likely to be of interest for coal development in the next 30 years and an idea of the magnitude of remaining recoverable reserves.

Point Data Preparation

Point data used in this study originate from a database compiled by the UGS over the past 20 years for the National Coal Resources Data System (NCRDS), which is a state cooperative program funded by the USGS. This database includes information from both unpublished and published sources. The BLM also provided additional records as part of a cooperative data sharing agreement with the UGS.

"Keypunch" NCRDS files in ASCII format, as well as BLM files in dBase format, were imported into a spreadsheet for simplification as a table of X, Y, Z data (easting, northing, and thickness or elevation) for each coalbed and exported as dBase (*.dbf) files for use in the ArcView GIS program. All data records were re-examined to verify correlations and spatial accuracy. Where necessary, spatial coordinates were converted to the Universal Transverse Mercator zone 12 coordinate system and bed identifications were revised or assigned. Bed thickness and depth is recorded to the nearest tenth of a foot. Elevation (above mean sea level) is also recorded to the nearest tenth of a foot, while spatial coordinates are recorded to the nearest tenth of a meter. However, the overall precision of the elevation and spatial data is probably closer to tens (rather than tenths) of meters; varied sources and vintages of the data hinder more exacting precision estimates.

Data from over 4,000 point locations were examined for possible use, and 1,961 data records were selected as the most reliable and useful (map 40). We preferentially selected drill hole data (1,153 points) since they provide the most reliable coal bed thickness, depth, and location values. Measured section data (808 points) were selected in areas where drill hole data are lacking; such data indicate minimum coal thickness since coal beds in Utah often thin at the outcrop as a result of weathering, slumping, or burning (Doelling, 1968). Furthermore, the precise elevation of coal beds in the measured sections was often difficult to determine. Accordingly, where we judged an elevation record for a measured section record unreliable, the record was not used to construct a coalbed elevation map. The selected point data were used to prepare coal bed elevation, interburden, and thickness maps.

Setting

Carbon and Emery Counties include all or part of three of the state's 22 coalfields: the Wasatch Plateau, Book Cliffs, and Emery coalfields (map 39). These three coalfields, each of which originally contained a resource estimated at over two billion tons of minable coal, make up half of the state's six major fields, and together, were estimated by Doelling (1972) to make up about one-third of the state’s coal resources. Mining currently occurs only in the Book Cliffs and Wasatch Plateau coalfields, although one mine in the Emery coalfield is preparing to re-open.

Table C-1. Utah's six major coalfields, with original minable resources in billions of tons. (coalbeds ≤ 3,000 feet deep and ≥ 4 feet thick; from Doelling 1972; Anderson, 1983)

COALFIELD	IDENTIFIED RESOURCES	HYPOTHETICAL RESOURCES	GRAND TOTAL
Alton	1.870	0.279	2.149
*Book Cliffs	3.527	0.157	3.684
*Emery	1.430	0.635	2.065
Kaiparowits Plateau	7.878	7.320	15.198
Kolob	2.014	-	2.014
*Wasatch Plateau	6.379	3.888	10.267
TOTAL	23.098	12.279	35.377

* field has resources in Carbon or Emery County

Carbon and Emery Counties have numerous, thick, coal zones, many in excess of 15 feet thick. However, most of the coal zones are lenticular, and commonly split into several thinner beds that thin rapidly or even disappear over a distance of a few miles. The lenticular nature of the coal, rapid lateral changes in the nature of floor and roof strata, intertonguing stratigraphic relations of the coal-bearing rocks, and faulting make correlation of individual coal beds difficult. The average thickness of the coal beds included in the resource estimates given above is slightly over 6 feet. At present, nearly all Carbon and Emery County operations are mining beds thicker than 6 feet. The coal beds of Carbon and Emery Counties occur in Upper Cretaceous strata; those of the Book Cliffs and Wasatch Plateau coalfields occur in the Blackhawk Formation, while the coals of the Emery coalfield are found in the Ferron Sandstone Member of the Mancos Shale.

The heat content of Carbon and Emery Counties' bituminous coal is high compared with that of the subbituminous coals typically produced in Montana, New Mexico, and Wyoming. Typical as-received heat contents range from 11,500 to 12,900 British thermal units (Btu) per pound of coal. Sulfur content is usually low (< 1 weight percent) in the major coalfields of Carbon and Emery Counties, but there are some areas with medium (1 to 2 weight percent) sulfur, particularly in the Emery coalfield. Near-surface coal quality is commonly degraded by oxidation, or it may be burned, for a considerable distance away from the outcrop.

KNOWN OCCURRENCES AND CHARACTERISTICS

Book Cliffs Coalfield

Setting

The Book Cliffs coalfield extends 70 miles across northern Carbon and eastern Emery counties, with an average width of 4 miles (Doelling, 1972). The field parallels the path of a line of the Union Pacific Railroad, which gives mine operators in this field a distinct transportation advantage over the mine operators in other major Utah coalfields. The coalbeds in the Book Cliffs field occur in the Upper Cretaceous Blackhawk Formation. This formation consists of six members, the Spring Canyon, Aberdeen, Kenilworth, Sunnyside, Grassy, and Desert in ascending order (figure C1). The first four members are the major coal-bearing units in the Book Cliffs coalfield. The lower members successively thin and pinch out to the east and south causing a general thinning of the Blackhawk Formation itself.

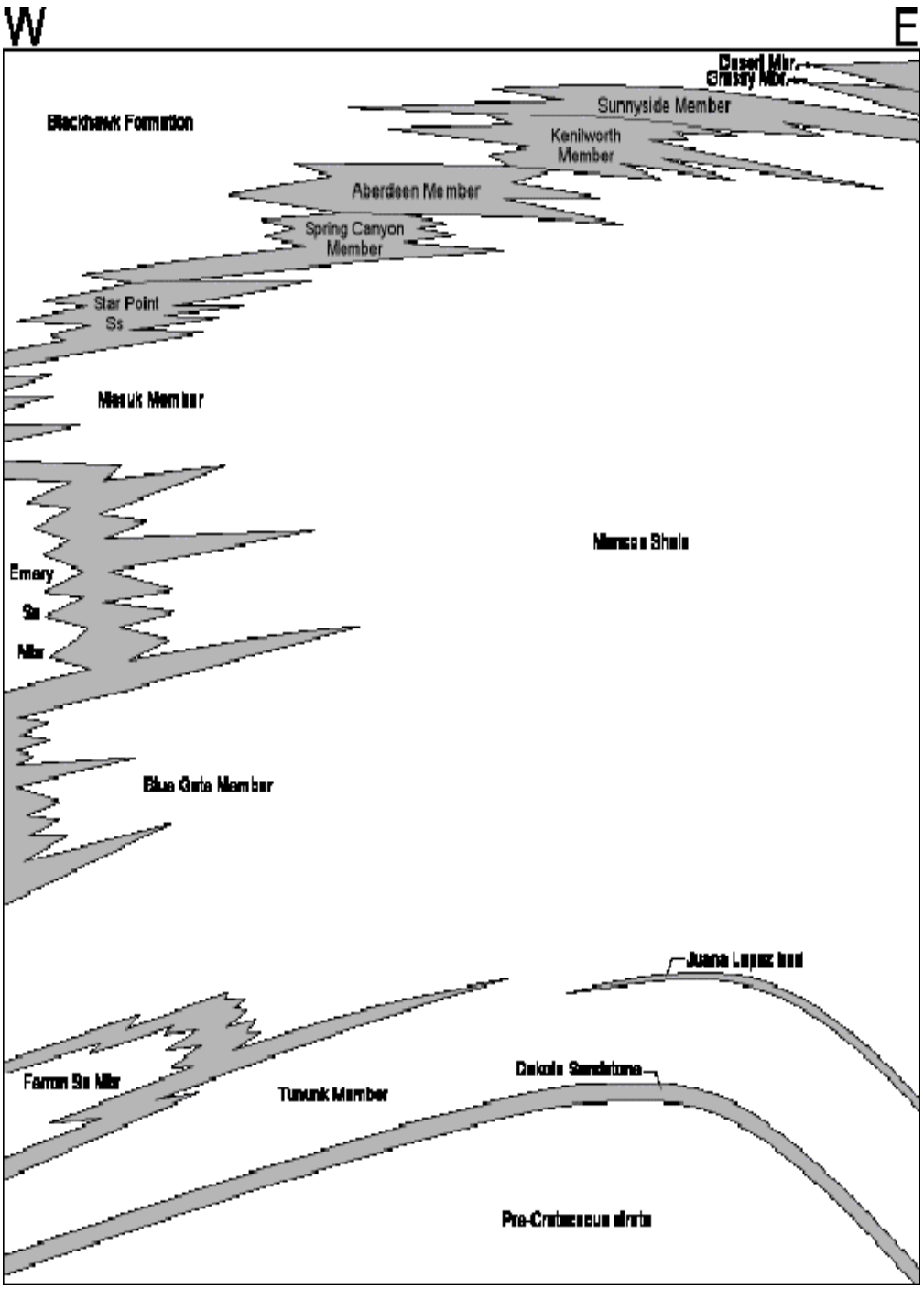


Figure C1. West-east cross section of the Upper Cretaceous rocks of Carbon and Emery Counties, Utah.

The coalbeds dip north and east at an average of 4 to 8 degrees in the Book Cliffs, but locally dips may be as high as 15 degrees (Doelling, 1972). Overburden increases rapidly north from the outcrop under an increasing blanket of younger Cretaceous and Tertiary sedimentary rocks. The area of minable resources (less than 2,500 feet of cover) is limited to a band about four to five miles down dip from the outcrop. Significant faults are present only in the Sunnyside and Woodside areas (map 39), but the faults are generally sufficiently wide-spaced to accommodate mining operations.

Coal Geology

The Book Cliffs field has been subdivided into four mining areas named, from west to east, Castlegate, Soldier Canyon, Sunnyside, and Woodside (map 39). Major coalbeds, or group of beds, in ascending order in the Castlegate area include the Spring Canyon coal group, the Castlegate coal group, and the Kenilworth bed. In the Soldier Canyon and Sunnyside areas, the major coal beds are the Gilson bed, and the Rock Canyon bed of the Kenilworth coal group, and coals of the Sunnyside group. Finally, in the Woodside area, major coals are found in the Sunnyside Member, with less significant coals in the Grassy, and Desert members of the Blackhawk Formation. The coal beds are usually lenticular and commonly split into several thinner benches or thin rapidly over a distance of a few miles. The minable thickness range of the major beds for each of the various Book Cliffs coal areas is listed below in descending stratigraphic order:

Castlegate Area beds	Thickness Range (ft)
Castlegate D	7 to 18
Kenilworth	7 to 10
Castlegate C	7 to 13
Castlegate B	7 to 11
Castlegate A	7 to 24
Subseam 3 (Spring Canyon)	7 to 10

Soldier Canyon Area beds	Thickness Range (ft)
Sunnyside Zone	7 to 10
Rock Canyon	7 to 13
Gilson	7 to 13

Sunnyside Area beds	Thickness Range (ft)
Sunnyside Zone	7 to 10
Rock Canyon (NW only)	7 to 13
Gilson (NW only)	7 to 13

Woodside Area beds	Thickness Range (ft)
Sunnyside Zone	7 to 13

Coal Quality

Coal from the Book Cliffs field generally has low ash contents, low to moderate sulfur contents, and high heat contents. The rank of the coal ranges from high-volatile C bituminous to high-volatile A bituminous, with the higher rank coals found in the eastern part of the field. The coal beds in the Sunnyside and Woodside areas are particularly noted for their good coking quality. Coal quality statistics for seven coal zones or beds from the Book Cliffs coalfield with 30 or more proximate analyses or 10 or more ultimate analyses are given below. The analytical data provided here comes from a UGS coal quality database, now in digital form, much of which was originally complied by Doelling (1972).

Table C-2. Coal quality statistics for Subseam 1 (Wattis this report) bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	7.1	20.8	4.3	2.2	71
Btu/lb	12,833	13,900	7,045	920	72
Fix. Carbon (%)	44.6	50.0	33.9	2.3	70
Vol. Matter (%)	44.19	48.5	31.4	2.6	70
Sulfur (%)	1.0	2.1	0.3	0.4	63
Moisture (%)	4.10	24.50	0.62	2.97	73

Table C-3. Coal quality statistics for Castlegate A bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	5.8	10.9	3.0	1.3	124
Btu/lb	12,819	14,460	11,840	432	116
Fix. Carbon (%)	47.37	54.50	28.34	2.72	117
Vol. Matter (%)	41.85	64.31	38.30	2.78	117
Sulfur (%)	0.6	5.2	0.3	0.5	117
Moisture (%)	4.9	10.3	1.2	1.8	124
Carbon (%)	74.39	80.70	70.19	2.29	34
Hydrogen (%)	5.7	6.4	5.0	0.3	34
Nitrogen (%)	1.4	1.6	0.9	0.1	34
Oxygen (%)	12.5	16.5	9.5	1.9	34
Chlorine (%)	0.01	0.08	0.00	0.02	14

Table C-4. Coal quality statistics for Castlegate B bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	6.3	12.8	3.8	1.1	233
Btu/lb	12,910	13,902	11,608	286	235
Fix. Carbon (%)	46.8	50.5	39.4	1.5	231
Vol. Matter (%)	42.9	46.4	38.7	1.2	231
Sulfur (%)	0.4	1.0	0.2	0.2	228
Moisture (%)	4.1	10.4	0.9	1.3	238
Carbon (%)	73.46	76.90	69.62	1.91	20
Hydrogen (%)	5.60	6.06	5.10	0.27	20
Nitrogen (%)	1.4	1.6	1.3	0.1	20
Oxygen (%)	13.0	15.1	11.0	1.3	20
Chlorine (%)	---	---	---	---	--

Table C-5. Coal quality statistics for Kenilworth bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	6.88	13.19	4.10	1.42	133
Btu/lb	12,783	14,360	11,629	302	129
Fix. Carbon (%)	46.99	53.34	40.97	1.93	129
Vol. Matter (%)	41.9	46.3	35.7	1.8	130
Sulfur (%)	0.38	0.70	0.10	0.11	117
Moisture (%)	4.2	8.1	1.9	1.2	133
Carbon (%)	74.2	80.5	71.8	2.6	15
Hydrogen (%)	5.7	6.0	5.0	0.2	15
Nitrogen (%)	1.4	1.5	1.2	0.1	15
Oxygen (%)	12.48	15.72	10.00	1.49	15
Chlorine (%)	---	---	---	---	--

Table C-6. Coal quality statistics for Gilson bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	7.19	14.20	2.67	2.11	171
Btu/lb	12,594	13,642	11,648	421	172
Fix. Carbon (%)	49.69	55.45	44.00	1.81	167
Vol. Matter (%)	38.5	44.3	30.9	1.6	167
Sulfur (%)	0.49	1.29	0.05	0.13	154
Moisture (%)	4.62	8.50	2.07	1.11	178
Carbon (%)	74.31	78.48	65.90	3.07	13
Hydrogen (%)	5.17	6.10	4.32	0.40	13
Nitrogen (%)	1.45	1.61	1.30	0.09	13
Oxygen (%)	10.68	13.40	5.56	2.21	13
Chlorine (%)	0.03	0.08	0.0	0.03	8

Table C-7. Coal quality statistics for Rock Canyon bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	7.7	11.8	3.3	1.8	56
Btu/lb	12,512	13,676	11,390	416	55
Fix. Carbon (%)	49.0	53.8	45.2	1.6	55
Vol. Matter (%)	38.41	43.18	34.25	1.28	55
Sulfur (%)	0.7	2.4	0.3	0.4	55
Moisture (%)	4.83	7.90	1.95	1.07	56

Table C-8. Coal quality statistics for Lower Sunnyside bed from the Upper Cretaceous Blackhawk Formation in the Book Cliffs coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	6.5	11.9	3.5	1.3	149
Btu/lb	12,745	14,220	9,527	490	150
Fix. Carbon (%)	50.3	74.3	41.6	3.1	143
Vol. Matter (%)	37.3	44.7	5.8	4.5	145
Sulfur (%)	0.8	3.0	0.1	0.3	142
Moisture (%)	5.33	15.17	1.90	1.67	161
Carbon (%)	73.1	81.6	62.2	2.8	31
Hydrogen (%)	5.46	5.86	4.30	0.35	31
Nitrogen (%)	1.5	1.6	1.2	0.1	31
Oxygen (%)	12.6	22.8	5.7	2.8	31
Chlorine (%)	0.01	0.07	0.00	0.03	6

The analyses for the seven beds, as summarized in tables C-2 through C-8, indicate that the coalbeds of the Book Cliffs coalfield are quite uniform in quality. The mean proximate analytical values show all the coalbeds are low in sulfur content (0.4-1.0 percent), low in ash content (5-8 percent), low in moisture content (4.1-5.33 percent), and high in heating value (12,512-12,910 Btu/lb) on an as-received basis.

Coal Resources

The Book Cliffs coalfield is one of Utah's six major coalfields with original minable resources in excess of two billion tons (Tabet, 2001). For this report, the remaining, in-place, resource base is limited to coal beds generally greater than seven feet thick, and with at least 200, but less than 2,500 feet of overburden. The coal resource estimates reported here were recalculated for this study to conform with mining and recovery parameters that the U.S. Bureau of Land Management (BLM) felt would allow the coal to be economic to mine in the next 30 years. The remaining, in-place coal resources of the Book Cliffs coalfield, separated out by mining period, are listed in table C-9. Other coal resources occur in the Book Cliffs coalfield, but they are thinner, or deeper, and would require a significant increase in the price of coal before they become economic to mine.

Table C-9. Remaining, in-place, coal resources by mining period for the Book Cliffs coalfield given in millions of short tons (for coal beds mostly > 7 feet thick and with >200, but < 2,500 feet of overburden).

Mining Period	Demonstrated	Inferred	Total
2003-2017	168.8	3.1	171.9
2018-2032	232.7	4.0	236.7
TOTAL	401.5	7.1	408.6

The coal resources defined for the period from 2003 though 2017 are found in just three of the coal beds of the Book Cliffs coalfield, the Castlegate A, the Gilson, and the Lower Sunnyside beds. Slightly over half of those resources are found in the Lower Sunnyside bed (see appendix A). In-place coal resources for the period beyond 2017 also include coal from the Wattis, Castlegate B, Castlegate C, Castlegate D, Kenilworth, Rock Canyon, and Upper Sunnyside coal beds. More than 98 percent of these remaining, in place, resources are in the demonstrated reliability category. Only 1.6 million tons (0.3 percent) of the 408.6 million tons of in-place coal identified in the Book Cliffs coalfield are less than seven feet thick. A more detailed summary of the remaining recoverable resources is provided in appendix A.

Wasatch Plateau Coalfield

Setting

The Wasatch Plateau coalfield extends southwest about 90 miles from western Carbon County, through western Emery County, and into eastern Sanpete and Sevier Counties (Doelling and Smith, 1982). Doelling and Smith (1982) expanded the field to include the formerly separate Mt. Pleasant and Salina Canyon coalfields as parts of a "larger" Wasatch Plateau coalfield. The field, as they defined it, is 13 to 22 miles wide. The eastern edge of the field is bounded by the outcrop of the coal-bearing Blackhawk Formation, and the western edge is bounded by a series of faults near the western margin of the Wasatch Plateau in Sanpete and Sevier Counties. Carbon and Emery counties contain the northern and central Wasatch Plateau coalfield areas (map 39).

Only the northern part of the field is directly served by rail transportation. One spur leaves the main line of the Union Pacific Railroad at the town of Colton and heads 15 miles southwest to serve the mines near Scofield, Utah. Three other spurs branch off at the town of Helper, two running five miles west, and one running 20 miles south. The longest one, which runs south to the town of Hiawatha, formerly served the Plateau mine of RAG Coal Company.

Rail shipment of coal production from the southern end of the field first requires a truck haul 55 miles westward to a loadout on a branch of the Union Pacific Railroad west of the town of Levan.

Coal Geology

Most of the coal in the Wasatch Plateau field is found in the lower third of the Blackhawk Formation. Eight individual beds have been identified which contain coal more than seven feet thick. A greater number of thick beds occur in the northern portion of the field than in the southern portion. Major coal bed groups of the Wasatch Plateau include, in ascending order, the Hiawatha zone (consisting of the Knight, Acord Lakes, Axel Anderson, and Cottonwood beds), the Blind Canyon zone, the Wattis zone, the Gordon zone, the Castlegate A zone, and the Castlegate D zone. The thickness range of minable coal for the major zones of the northern, central, and southern parts of the Wasatch Plateau field follows:

Northern Wasatch Plateau beds	Thickness Range (ft)
Castlegate D (Tank)	6 to 8
Gordon (Bob Wright-McKinnon)	6 to 18
Wattis (Upper O'Connor of Scofield area)	6 to 16
Blind Canyon (Lower O'Connor B of Scofield area)	6 to 25
Cottonwood (Lower O'Connor A of Scofield area)	6 to 29
Axel Anderson (Flat Canyon of Scofield area)	6 to 15

Central Wasatch Plateau beds	Thickness Range (ft)
Wattis	6 to 16
Blind Canyon (Bear Canyon -Third)	7 to 25
Cottonwood (Hiawatha)	6 to 29
Axel Anderson (Hiawatha)	6 to 15
Acord Lakes (Hiawatha)	6 to 15

Southern Wasatch Plateau beds	Thickness Range (ft)
Axel Anderson	6 to 15
Acord Lakes (Upper Hiawatha)	6 to 20
Knight (Hiawatha)	6 to 17

The coal beds generally have shallow dips to the west, but are cut by several major north-south trending fault zones, or grabens, with displacements ranging from a few feet to a several hundred feet. These normal faults offset the coal beds and interfere with mining; however, there is usually sufficient room between the faults to conduct mining (Doelling, 1972).

Coal Quality

Coal beds of the Wasatch Plateau field generally have good quality, with low ash and

sulfur contents, and high heat contents. Most of the coals are high-volatile C bituminous in rank, although locally some coals in the northern part of the field are high-volatile B bituminous.

The Wasatch Plateau coal beds are often resin-rich and may contain between 2 and 15 percent resin by volume. Although not presently used, the resin has been historically recovered as a byproduct for use in adhesives, in paints and coatings, and as a binder in printing ink (Tabet and others, 1995a). Coal quality statistics are summarized in Tables C-11 through C-14 for four Wasatch Plateau field coal beds which have a sample population of more than 30 proximate analyses, and usually more than 20 ultimate analyses (UGS coal quality database, in preparation). The names reported for the Wasatch Plateau coal beds in the coal quality database does not reflect the new names assigned to the beds based on newer understanding of the stratigraphic relations of the beds. Time constraints did not allow the analytical data to be updated with new bed names, thus the analyses are reported here use the older bed names originally assigned. Those four Wasatch Plateau coal beds (using older names) are the Blind Canyon, the Castlegate A, the Hiawatha, and the Upper Hiawatha.

Table C-11. Coal quality statistics for the Blind Canyon bed from the Upper Cretaceous Blackhawk Formation in the Wasatch Plateau coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	7.1	18.3	2.3	2.3	144
Btu/lb	12,844	13,966	10,800	463	142
Fix. Carbon (%)	44.96	50.08	37.50	2.12	136
Vol. Matter (%)	42.8	48.4	37.5	1.7	139
Sulfur (%)	0.52	1.10	0.29	0.14	130
Moisture (%)	5.13	8.37	1.20	1.11	145
Carbon (%)	72.74	80.50	67.69	3.15	21
Hydrogen (%)	5.72	6.66	4.69	0.48	21
Nitrogen (%)	1.3	1.6	0.6	0.2	20
Oxygen (%)	11.81	16.50	8.82	1.94	21
Chlorine (%)	0.01	0.03	0.00	0.01	8

Table C-12. Coal quality statistics for the Castlegate A bed from the Upper Cretaceous Blackhawk Formation in the Wasatch Plateau coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	6.0	13.5	2.8	2.0	103
Btu/lb	12,206	14,170	10,475	593	93
Fix. Carbon (%)	45.2	53.5	28.3	2.7	95
Vol. Matter (%)	41.6	54.3	36.6	2.5	95
Sulfur (%)	0.59	1.60	0.31	0.18	81
Moisture (%)	7.3	14.1	3.6	1.8	105
Carbon (%)	72.1	79.0	67.5	3.1	17
Hydrogen (%)	5.75	6.31	5.30	0.26	17
Nitrogen (%)	1.4	1.6	1.1	0.1	17
Oxygen (%)	14.8	20.3	11.4	2.8	17
Chlorine (%)	0.0	0.0	0.0	0.0	4

Table C-13. Coal quality statistics for the Hiawatha bed from the Upper Cretaceous Blackhawk Formation in the Wasatch Plateau coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	6.67	25.72	0.05	1.98	521
Btu/lb	12,689	14,530	9,073	487	521
Fix. Carbon (%)	45.64	54.40	31.26	1.89	502
Vol. Matter (%)	42.0	47.4	4.4	2.3	509
Sulfur (%)	0.63	4.06	0.29	0.25	479
Moisture (%)	5.55	14.24	0.70	1.58	537
Carbon (%)	71.60	81.88	51.38	6.05	58
Hydrogen (%)	5.51	6.30	3.89	0.51	58
Nitrogen (%)	1.3	1.7	0.3	0.2	58
Oxygen (%)	12.18	17.18	9.25	2.18	58
Chlorine (%)	0.05	0.13	0.00	0.04	22

Table C-14. Coal quality statistics for the Upper Hiawatha bed from the Upper Cretaceous Blackhawk Formation in the Wasatch Plateau coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	8.99	25.09	2.79	5.07	34
Btu/lb	11,503	12,396	9,443	750	29
Fix. Carbon (%)	45.28	51.95	34.66	4.03	30
Vol. Matter (%)	37.73	44.52	33.10	2.45	32
Sulfur (%)	0.54	1.46	0.28	0.24	34
Moisture (%)	8.04	12.9	2.66	1.87	31
Carbon (%)	64.90	69.75	53.09	4.80	22
Hydrogen (%)	4.59	5.20	3.99	0.32	22
Nitrogen (%)	1.13	1.44	0.96	0.12	22
Oxygen (%)	11.07	18.0	9.22	1.67	22
Chlorine (%)	0.01	0.11	0.00	0.02	21

The Wasatch Plateau coal beds have similar mean proximate and ultimate analytical values, but the Upper Hiawatha (Acord Lakes) bed, which mainly occurs in the southern part of the field, shows the greatest quality differences. This bed is slightly higher in ash and moisture, and slightly lower in heat content, fixed carbon content, and volatile matter content than the other three beds reported here. In general, the coals of the Wasatch Plateau decrease slightly in rank and heat content from north to south.

Coal Resources

The Wasatch Plateau coalfield is also a major Utah coalfield with original, in-place coal resources in excess of 10.2 billion tons (Doelling,1972). Using the same criteria and procedures described above for the Book Cliffs coalfield, an estimated resource base of 1,054.8 million tons of in-place coal is available for mining in Carbon and Emery Counties within the Wasatch Plateau coalfield (see Table C-15). About 331.7 million tons have been defined as likely to be mined in the period from 2003 through 2017, with another 723.1 million tons of coal available for

mining from 2018 through 2032. Over 94 percent of the coal resource base identified for mining in the first 15 years is found in the Axel Anderson, Cottonwood, and Blind Canyon coal beds, with lesser amounts in the Acord Lakes, and Castlegate D beds. Over 94 percent of the coal identified as available for mining in the next 30 years lies within 0.75 miles of a thickness measurement point, or in the demonstrated resource reliability category (Wood and others, 1983). Only 20.4 million tons (1.9 percent) of the 1,054.8 million tons of the in-place coal resources identified in the Carbon and Emery Counties part of the Wasatch Plateau falls in the six- to seven-foot-thick category.

Table C-15. Remaining, in-place resources by mining period for the Wasatch Plateau coalfield within Carbon and Emery Counties given in millions of short tons (for coal beds mostly > 7 feet thick, and with > 200 feet, but < 2,500 feet of overburden).

Mining Period	Demonstrated	Inferred	Total
2003 - 2017	308.1	23.6	331.7
2018 - 2032	688.0	35.1	723.1
TOTAL	996.1	58.7	1,054.8

Emery Coalfield

Setting

The Emery coalfield (map 39) was originally defined from the surface exposures of the Ferron Sandstone Member of the Mancos Shale (Lupton, 1916). The surface exposures cover an area 25 miles long and 2 to 10 miles wide near the Sevier-Emery County border. This area lies about 45 miles southwest of Price, Utah, and the site of the nearest rail loadout. The original field is bounded on the east by an erosional escarpment and on the west by a fault zone (Doelling, 1972). Surface exposures show the coal thinning and disappearing to the north; however, published drilling data show that similar thick coal beds also occur in the Upper Cretaceous Ferron Sandstone in the subsurface extending northward all the way to Price (Bunnell and Holberg, 1991, and Tabet and others, 1995b). Based on published coal thickness data, the northern boundary of the field could be defined near Price, Utah, and could potentially extend further north into the Uinta Basin. Future exploration along this subsurface Ferron Sandstone trend will expand the known extent of coal resources of the Emery coalfield. For the purpose of this report, the Emery coalfield is confined to the area originally defined by Lupton (1916).

Coal Geology

The coal of the Emery field occurs in the 300- to 900-foot-thick Ferron Sandstone Member of the Mancos Shale (figure C1). Where exposed in the south, this unit contains 13 coalbeds, four of which exceed seven feet in thickness. Lupton (1916) gave the beds letter designations from A to M in ascending order of occurrence. Beds I and J are the most important, and the separation between them is minimal in many areas, resulting in a single bed up to 25 feet thick (Doelling, 1972). The dip of the coal beds varies from 2 to 12 degrees to the west, with most between 4 and 7 degrees. Faulting is minor and presents little difficulty to mining. In the southern end of the field 76 percent of the resources are under less than 1,000 feet of cover, and very thin overburden in some areas makes surface mining possible. The reported thickness ranges of the major coal beds in the Emery coalfield are given below:

	Emery Field Beds	Thickness Range (ft)
upper group	J bed	6 to 13
	I bed	6 to 30
lower group	C bed	6 to 20
	A bed	6 to 16

Coal Quality

The quality of coal from the Emery field, particularly the sulfur and ash contents, is quite variable throughout the field. Generally the sulfur and ash contents of the beds from this field are somewhat higher than for coals from the Book Cliffs and Wasatch Plateau coalfields. The rank of coal is high-volatile C bituminous where fresh and unweathered; shallow coal beds are often oxidized or burned for a considerable distance away from the outcrop. Coal quality statistics for several beds from this coalfield are shown in Tables C-16 to C-19.

Table C-16. Coal quality statistics for the A bed from the Upper Cretaceous Ferron Sandstone Member of the Mancos Shale in the Emery coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	13.22	29.33	4.70	8.76	10
Btu/lb	11,979	13,529	9,504	1,393	10
Fix. Carbon (%)	46.32	51.01	37.88	4.38	10
Vol. Matter (%)	37.04	41.97	28.65	4.63	10
Sulfur (%)	0.78	1.46	0.37	0.33	10
Moisture (%)	3.43	5.10	2.60	0.87	10
Carbon (%)	66.63	74.84	53.44	7.70	9
Hydrogen (%)	4.85	5.50	3.88	0.66	9
Nitrogen (%)	1.25	1.47	0.88	0.17	9
Oxygen (%)	10.48	15.50	8.52	2.46	9
Chlorine (%)	0.03	0.06	0.00	0.02	8

Table C-17. Coal quality statistics for the C bed from the Upper Cretaceous Ferron Sandstone Member of the Mancos Shale in the Emery coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	14.54	23.60	6.60	6.81	6
Btu/lb	11,275	12,300	9,965	913	6
Fix. Carbon (%)	43.42	47.90	39.60	3.39	6
Vol. Matter (%)	37.79	40.70	33.40	2.79	6
Sulfur (%)	1.26	2.10	0.66	0.63	6
Moisture (%)	4.25	5.21	2.30	1.14	6
Carbon (%)	64.98	68.60	58.90	4.48	4
Hydrogen (%)	5.30	5.70	4.80	0.42	4
Nitrogen (%)	1.18	1.30	1.00	0.15	4
Oxygen (%)	14.65	16.40	12.70	1.74	4
Chlorine (%)	---	---	---	---	--

Table C-18. Coal quality statistics for the G bed from the Upper Cretaceous Ferron Sandstone Member of the Mancos Shale in the Emery coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	14.15	39.09	3.74	9.40	12
Btu/lb	11,630	13,319	8,020	1,520	12
Fix. Carbon (%)	43.48	50.49	29.69	5.71	12
Vol. Matter (%)	38.06	43.81	25.72	4.62	12
Sulfur (%)	1.03	2.22	0.09	0.83	7
Moisture (%)	4.30	8.80	3.14	1.60	12
Carbon (%)	61.96	72.81	44.81	9.43	7
Hydrogen (%)	4.67	5.10	3.35	0.64	7
Nitrogen (%)	1.24	1.52	1.06	0.18	7
Oxygen (%)	10.06	18.90	5.35	4.28	7
Chlorine (%)	0.03	0.06	0.00	0.03	7

Table C-19. Coal quality statistics for the I bed from the Upper Cretaceous Ferron Sandstone Member of the Mancos Shale in the Emery coalfield (as-received basis).

	Mean	Maximum	Minimum	Standard Deviation	Sample Population
Ash (%)	8.20	17.26	4.01	2.95	47
Btu/lb	12,179	13,139	8,467	889	43
Fix. Carbon (%)	47.4	51.9	37.3	2.9	46
Vol. Matter (%)	38.91	43.89	34.30	1.72	46
Sulfur (%)	1.12	6.58	0.31	1.11	46
Moisture (%)	5.5	16.7	2.8	2.4	47
Carbon (%)	68.58	73.8	61.25	3.87	13
Hydrogen (%)	5.2	5.7	4.8	0.3	13
Nitrogen (%)	1.26	1.35	1.10	0.07	13
Oxygen (%)	13.06	18.80	5.82	3.42	13
Chlorine (%)	0.05	0.07	0.03	0.02	2

Coal Resources

The Emery coalfield is also a major Utah coalfield; original, in-place coal resources are estimated by Doelling (1972) at 675.8 million tons, for the currently defined southern portion of the field. Inclusion of coal beds as thin as four feet thick in the resource estimate dramatically increases the in-place coal resources to over 3.5 billion tons.

Emery County contains 40 percent of the in-place coal resources of the Emery coalfield, or 273.1 million tons (see table C-21). No coal resource estimates have been published for the northern, more deeply buried portion of the field, but Bunnell and Holberg (1991) indicate the resources in this area are substantial, and some are at minable depths. The Utah Geological Survey is compiling information on the thickness and depth of the coals in the Ferron Sandstone of the northern Emery coalfield from coal bed gas drill holes for use in future studies of the coal resources of this area.

Table C-21. Original, in-place coal resources by county for the southern part of the Emery coalfield given in millions of short tons (from Doelling, 1972: for coal beds averaging $\geq$ 7 feet thick and with < 2,500 feet of cover).

County	Demonstrated	Inferred	Total
Emery	200.8	72.3	273.1
Sevier	185.8	216.9	402.7
Total	386.6	289.2	675.8

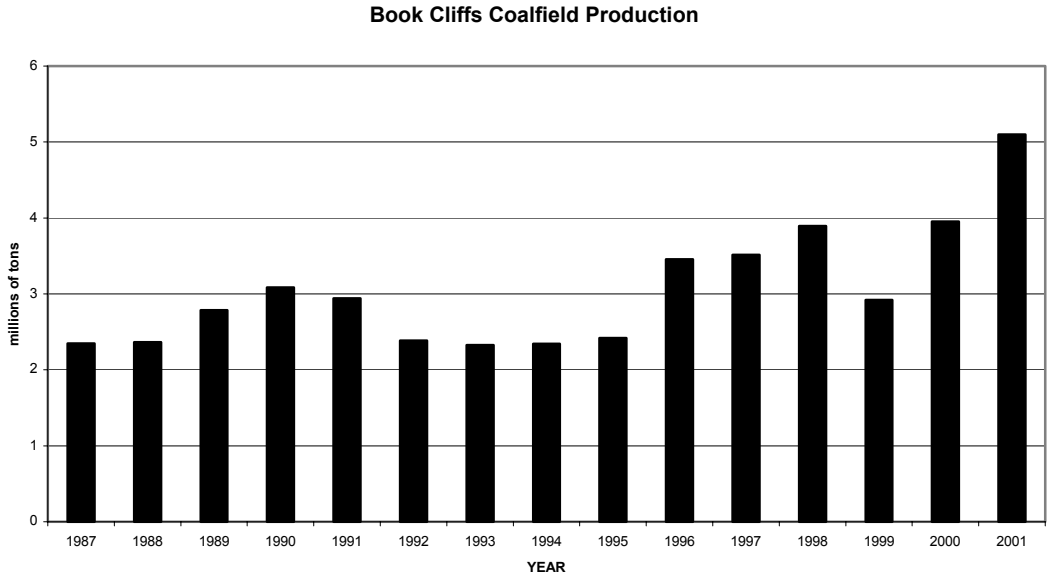
PAST PRODUCTION AND TRENDS

Introduction

Historically, most Utah coal production has come from underground mines in central Utah, and future production will probably continue to come predominantly from this region. The three important coalfields of central Utah, and Carbon and Emery counties, are the Book Cliffs, Wasatch Plateau, and the Emery fields.

Book Cliffs Coalfield

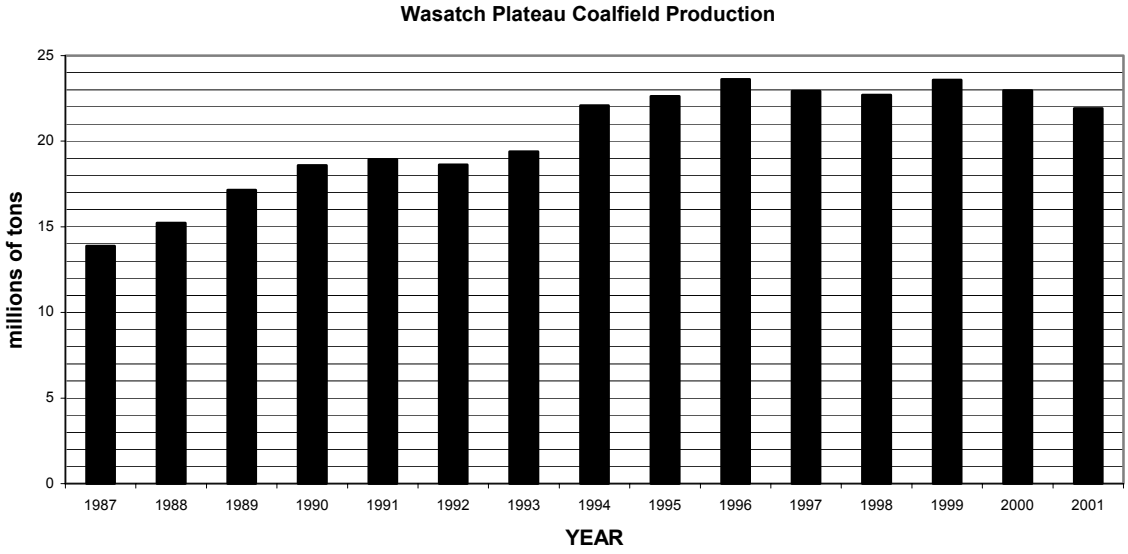
The Book Cliffs coalfield is the second most important field in the state and has produced a total of 293.3 million tons from 1889 through 2001 (Utah Energy Office, in preparation). Since 1996, annual coal production from this field has increased from the two to three million ton per year range it had maintained for about 10 years to the three to five million ton range. Production from this field in 2001 came from four mines, and totaled 5.11 million tons (see graph), or about 19 percent of the state's production.



Wasatch Plateau Coalfield

The Wasatch Plateau coalfield covers parts of Carbon, Emery, Sanpete, and Sevier counties. Overall, this field has both the greatest annual and cumulative coal production of any coalfield in the state of Utah (Utah Energy Office, in preparation). Coal in this field was first developed in the Carbon County portion during the late nineteenth century. Over the years, production has expanded from the northern, Carbon County portion of the field to the central and southern parts of the field in Emery and Sevier Counties. The Sanpete County portion of the field is generally deep and has not been mined. Cumulative production from over 80 mines through 2001 has totaled 523.7 million tons.

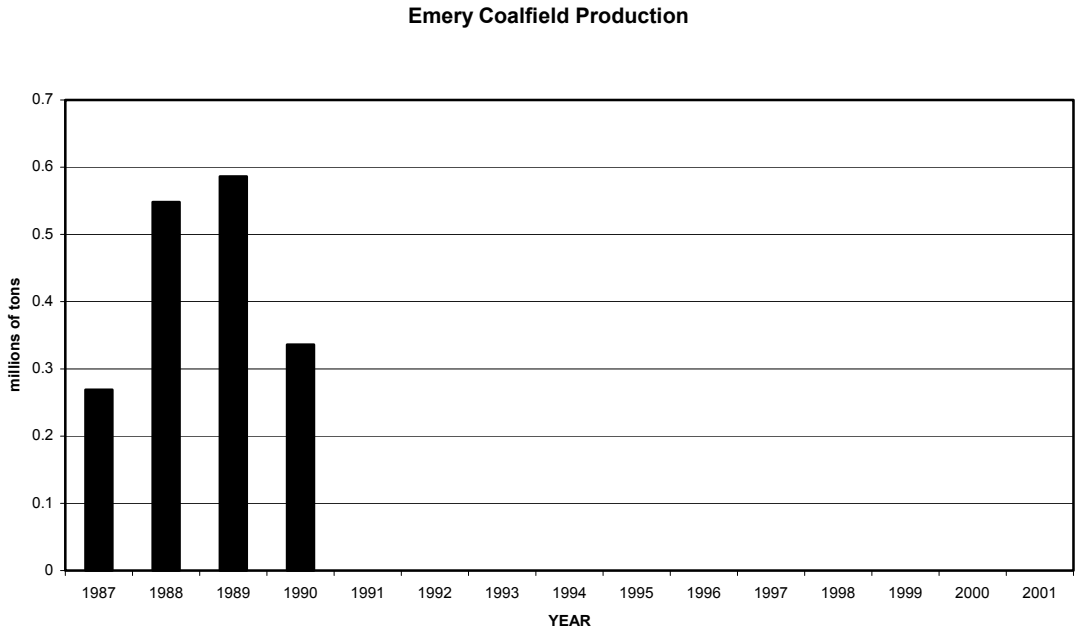
There were eight active mines in this field in 2001, which produced 21.92 million tons of coal (see graph), or about 81 percent of the state's total. Production from this field has increased rapidly since the mid-1980's, doubling since 1986.



Emery Coalfield

The Emery coalfield's last active mine ceased production in 1990 when Consolidation Coal Company idled its Emery mine. Through 1994, this mine's activity was limited to shipping a very small quantity of coal from its stockpile, and in 1995, Consolidation Coal decided seal the portals of the mine and limit maintenance to pumping water to keep the mine from flooding. The company announced plans in early 2002 to re-open its Emery mine later in that year.

Production from the Emery coalfield was erratic during its last few years of mining until the final year of production in 1990 (see graph). Low coal prices, and the lack of nearby rail transportation have undoubtedly hindered large-scale development of the abundant coal resources from this field. Total production from the field through 2001 is estimated at 9.5 million tons (Utah Energy Office, in preparation).



CURRENT PRODUCTION AND EXPLORATION ACTIVITIES

According to the Utah Energy Office (in preparation), the state's 2001 coal sales reached 26.58 million tons from production of 27.03 million tons. Increased demand for Utah coal finally translated to higher prices in 2001, and the average price paid per ton of coal edged slightly higher. Most of the present coal tonnage comes from large, highly-productive mines equipped with longwall mining machines; four of Utah's mines rank among the top 20 of the nation's largest underground coal mines.

Coal Industry Structure

The Utah coal industry is highly competitive and production has become concentrated among fewer, but larger mines. For example, Utah had 29 mines operated by 16 companies In 1982, but by 2001 there were only 11 coal mines operated by 5 parent companies in just the Book Cliffs and Wasatch Plateau coalfields. In addition, one company, Covol Industries, reprocesses waste coal and sells it as a fuel. The current 5 parent companies operating Utah coal mines are Andalex Resources Incorporated, Canyon Fuel Company LLC (Arch Coal), CO-OP Mining Company, Interwest Mining Company, and Lodestar Mining, Incorporated. Cyprus Plateau Mining Company operated mines in Utah as recently as 2000, but all their mines are closed and in reclamation as of 2002.

Andalex Resources Incorporated

Andalex Resources has operated coal mines in Utah since 1980, when it opened the Tower Division to operate the Aberdeen, Apex, Centennial, and Pinnacle mines in the Book Cliffs field northeast of Price, Utah. Mining at this division is currently limited to a continuous miner operation at the Tower Division. In late 1994 Nevada Power sold Andalex Resources its 50 percent interest in the Crandall Canyon mine located in the Wasatch Plateau coalfield. Since buying a 50-percent stake and assuming the role of operator at that mine, Andalex has expanded the production capacity of the mine by leasing an additional 18 million tons of recoverable federal coal reserves and installing a longwall mining machine. In 1996, Andalex Resource also expanded the coal handling capacity of its Wildcat loadout facility to 3.5 million tons per year to handle the company’s growing production. Longwall reserves at the Crandall Canyon mine will be exhausted by 2003, and the mine will revert back to a smaller continuous miner operation. Production from Andalex’s Tower Division mine and Crandall Canyon mine for 2001 was 0.8 million tons and 4.0 million tons respectively.

In addition to these existing mines, Andalex Resources opened a new mine on the B Canyon property it purchased in early 1997 from British Petroleum. The new mine, named West Ridge, is located in the Book Cliffs coalfield north of the town of Sunnyside. Construction on this new 3-million-ton-per-year mine was completed in 2000, and the longwall machine was installed in 2001, raising production for that year to 2.3 million tons. The coal is trucked to the Andalex's existing Wildcat loadout near Helper, Utah. Andalex's three mines accounted for 17.8 percent of Utah's 2001 coal production.

Canyon Fuel Company LLC

In March 1998, ARCO Coal Company sold its 65 percent interest in the Canyon Fuel Company LLC (the remaining 35 percent is owned by Itochu Corporation), to Arch Coal Company. Canyon Fuel owns three Utah coal operating companies and a nine percent interest in the Los Angeles Export Terminal Company. The three operating companies owned by Canyon Fuel are: the Soldier Creek Coal Company, the Southern Utah Fuel Company, and the Utah Fuel Company.

The Soldier Creek Coal Company operated the Soldier Canyon mine in the Book Cliffs coalfield, until 1998. Additional recoverable coal exists to the north and east of the Soldier Canyon workings, but production of these deeper resources has been deferred until the coal resources of the Dugout Canyon mine have been depleted. Meanwhile, the Soldier Creek Coal Company has shifted production to the 2.5-million-ton-per-year underground mine Dugout Canyon mine, located on state coal leases to the east of the Soldier Canyon mine. Initial coal production from the newer mine began in 1998 and totaled 0.17 million tons, and production for 2001 grew to 2.0 million tons. Initial mining has come from the Rock Canyon coal bed, but future mining will come from the Gilson bed.

The Southern Utah Fuel Company operates the SUFCO mine in the Sevier county portion of the Wasatch Plateau coalfield. This longwall mine produced 7.0 millions tons of coal from the Upper Hiawatha bed in 2001. In May 1999, to ensure an extended productive life for the SUFCO mine, Canyon Fuel leased The Pines federal coal tract. This tract, which lies immediately east of the SUFCO mine, adds approximately 70 million tons of additional recoverable coal to the mine.

The Utah Fuel Company operates one longwall mine in the northern part of the Wasatch Plateau coalfield, the Skyline No. 3 mine near Scofield, Utah. This mine had production of 4.1 million tons of coal in 2001 from the Lower O'Connor bed. The recoverable coal reserves of the Utah Fuel Company were augmented by the acquisition in May 1996 of the Winter Quarters federal lease tract containing about 28 million tons. In 1998, the company applied for 2,612

acres of additional federal coal to the west of its holdings in a tract known as the Flat Canyon tract; the tract, containing an estimated 36 million tons of recoverable coal, may be offered for sale in 2003.

The 2001 production from all of the Utah coalmines controlled by Canyon Fuel Company totaled 12.86 million tons. This amounted to 47.6 percent of the Utah's total 2001 coal production. These mine properties contained an estimated 300 million tons of recoverable coal according to a 1998 news release announcing the Canyon Fuel Company purchase by Arch Coal Company.

CO-OP Mining Company

The CO-OP Mining Company, a family-owned company, operates the Bear Canyon #1 and #2 mines. These room-and-pillar mines lie in the Emery County portion of the Wasatch Plateau coalfield. In 2001, production from these mines was 1.25 million tons, or 4.6 percent of the state's total production. As with other Utah coal operators, CO-OP Mining recently added to its coal reserves by purchasing the Mohrland property from the Intermountain Power Agency in early 1997. This nearly 3,000-acre tract lies due east of the Bear Canyon #1 mine, but is separated from it by a major fault. The Mohrland property also includes an existing loadout on the Utah Railway.

Cyprus Plateau Mining Company

Cyprus Plateau Mining Company was sold to RAG International Mining Company of Essen, Germany in mid-1999. Plateau Mining was the operator of the Star Point mine complex in the Wasatch Plateau coalfield for a number of years. Production at the Star Point #2 mine in 2000 and totaled 0.09 million tons. This was the final year of production at this mine because the available reserves were depleted. Final reclamation of this mine is nearing completion. The company had hoped to shift production to a new mine in the Book Cliffs coalfield to the north of Helper, Utah. In April 1996, Cyprus Plateau Mining Company received a permit for a 5-million-ton-per-year mine from the Utah Division of Oil, Gas and Mining, and the first coal was produced in September 1996. Coal production for the Willow Creek mine in 2000 totaled 1.35 million tons, but the mine was sealed in November 2000 after the second fire in two years broke out in the gob behind the longwall. The future of longwall mining at the Willow Creek mine is uncertain now that the mine has been closed, and may be moving into reclamation. Because of the unfavorable mining conditions, the remaining minable resources are not expected to become economic to mine until the period from 2018 through 2032.

Interwest Mining Company

Interwest Mining Company, a subsidiary of PacifiCorp, operated two longwall mines in the Emery County portion of the Wasatch Plateau coalfield. Interwest Mining purchased the Trail Mountain mine from ARCO Coal Company in 1992 and idled the mine until the second half of 1995, when longwall reserves at the Cottonwood mine were depleted. Also in 1992, Interwest Mining submitted an application to lease the Cottonwood Canyon federal tract containing an additional 75 million tons of recoverable coal in the Hiawatha bed that lie to the north and west of the Trail Mountain mine; no sale date has been set. The Trail Mountain mine resumed full operation in 1996 using a longwall machine and produced 3.41 million tons of coal in 1998. In 2001, the Trail Mountain produced 0.9 million tons, but was closed again when difficult mining conditions were encountered and the company decided to purchase coal on the open market rather than continue to operate this mine. The company's interest in leasing the Cottonwood tract has diminished with the closure of the Trail Mountain mine, and the aquisition of additional reserves for its nearby Deer Creek mine.

Interwest Mining's second operation, the Deer Creek mine, produces coal from the Blind Canyon bed, with future plans to also mine coal from the stratigraphically lower Hiawatha (Axel Anderson) bed. Longwall production from this mine in 2001 totaled 4.3 million tons, but the level of production will likely increase with the closure of the Trail Mountain mine. The life of the Deer Creek mine was extended with the acquisition of the Mill Fork federal lease tract in 1999, which adds another 46 million tons of recoverable coal to the company holdings. Total 2001 production for the Interwest Mining Company operation was 5.26 million tons, or 19.5 percent of the state's total.

Lodestar Energy, Incorporated

Lodestar Energy, owned by Renco, Inc., operates on the properties of Valley Camp of Utah, Incorporated that were originally owned by the Quaker State Oil Company. Lodestar has mined out the underground resources at the White Oak #2 mine (Lower O'Connor bed), and has begun reclamation of the surface facilities at that mine. As part of the reclamation effort, they received permission to recover several hundred thousand tons of shallow coal near the portals and loadout via surface mining. This surface mine is called the Whiskey Creek mine. Lodestar's last coal production from the White Oak mine was in 2001, and totaled 0.52 million tons. Lodestar has applied to lease 5.5 million tons of in-place coal on the Slaughter House Canyon federal tract to the east of its White Oak mine, and proposes to surface mine the shallow coal of that tract.

Lodestar also operates the Horizon Coal Company, which owns property in the northern Wasatch Plateau coalfield. Horizon Coal Company has a mine permit to develop coal reserves behind the abandoned Blue Blaze/Consumers Mine in the Gordon Creek area. Production at the Horizon mine began in early 1998 and totaled 0.11 million tons, but was shut down the following year due to permitting problems. The permitted mine capacity is 1.5 million tons per year. To allow for continued life of the Horizon mine, an additional 1,288 acres of federal coal was leased in 1998 in the Beaver Creek tract. This tract, which lies to the north of existing Horizon holdings, contains about 6 million tons of coal in the Hiawatha bed. With the depletion of the White Oak mine underground reserves in 2001, the company attempted to restart the Horizon mine in late 2001, but difficult mining conditions caused the mine to be idled by mid 2002. The closure and inactivity at the Lodestar mines has created market opportunities for other central Utah coalmines.

Coal Markets

Utah coal is shipped to utility and industrial markets mainly in the western U.S., including the states of Utah, California, Nevada, Washington, Arizona, Idaho, and Colorado. Starting in 1994, the *Federal Clean Air Act of 1990* required the implementation a new phase of emission standards, which resulted in increased shipments of Utah's low-sulfur coal to markets in the eastern United States. Those eastern U.S. states receiving Utah coal in 2001 included Illinois, Pennsylvania, Tennessee, and Virginia (Utah Energy Office, in preparation). Utah's high quality, bituminous coal also has a significant export market to several Pacific Rim countries. Increased demand for Utah’s high-quality coal has caused production to increase about 22 percent from 1993 through 2001. This rapid growth in production has caused coal companies to look for ways to expand production at existing operations and to look for new opportunities to open mines in previously mined and virgin areas of central Utah.

The market segments served by Utah coal operators in 2001, listed in decreasing order, included the electric utility, industrial, Pacific Rim export, and residential/commercial segments. Statistical data from the Utah Energy Office (in preparation) on coal sales and mines from 1998 to 2001 and estimates for 2002 are summarized in Table C-22. It appears that coal prices may have bottomed in 2000, after years of steady decline since the 1980s. As the easily mined coal is depleted in the next 15 years, an increase in sales price will be needed to allow mining companies to go after coal that is deeper or has other factor that make it more difficult to mine than present reserve blocks.

Table C-22. Utah coal sales statistics, 1998-2001 (sales figures are in millions of tons)

	1998	1999	2000	2001	2002*
Total Sales	26.974	26.180	27.629	26.930	27.000
Elec. Util.	20.516	20.072	20.915	20.088	20.500
Industrial	3.429	3.359	3.526	3.822	3.500
P.R. Export	2.735	2.567	2.960	2.394	3.000
Res./Com.	0.294	0.182	0.223	0.627	0.500
Coke Plant	0.000	0.000	0.005	0.000	0.000
No. of Mines	15	14	14	12	13
No. of Operators	10	10	10	10	11
Ave. Price/ton (FOB mine)	$17.83	$17.36	$16.93	$17.50	$17.75

*estimated values

GEOLOGIC POTENTIAL

Book Cliffs Field

Although production from this field was relatively steady in the 1990s, it appears that production during the next decade will grow with the renewed interest in developing the abundant coal resources of this field. Three mines are operating in this field and a fourth mine is planned by a separate company. Plateau Mining had begun producing coal in 1996 at the Willow Creek mine just north of Price with plans to eventually produce up to 5 million-tons-per-year. Two fires in the span of two years led RAG Coal to permanently close this mine in 2002, after no buyer could be found. The misfortune at the Willow Creek mine has improved market opportunities for the other Book Cliffs coalmines. In 1999, Canyon Fuels brought the 2 million-ton-per-year Dugout Canyon underground mine into production; it lies immediately east of its idled Soldier Canyon mine. Secondly, Andalex Resources opened the 3 million-ton-per-year West Ridge mine in 2001 on the B Canyon property northwest of Sunnyside it purchased from British Petroleum. Finally, Utah American Energy is attempting to bring the Lila Canyon mine into production on leases southwest of the old Horse Canyon mine. At full production, these new mines could push annual coal production from the Book Cliffs field to a record 7 million tons. Production of coal from tracts at, or adjacent to, the Tower Division, Dugout Canyon, West Ridge, and Lila Canyon mines are the resource expected to be extracted in the next 15 years (Map 41).

Remaining in-place coal resources for the Book Cliffs field is estimated at 409.1 million tons. The minable resources are derived by first limiting the maximum thickness to 14 feet, the maximum cutting height of current longwall equipment. This leaves in-place minable resources of 393.4 million tons. Using recovery factors of 60 and 70 percent for the various tracts

identified, results in an estimated remaining recoverable coal reserve in the Book Cliffs coalfield of 275.2 million tons. This is enough coal to provide about 55 years of production at 2001 production rates (5 million tons per year), but only 39 years if production increases to the 7 million tons per year rate. The recoverable reserve defined here appear to be more than what is strictly need for mining in the next 30 years; however, the reserves in the Book Cliffs are more difficult to mine because they are gassy, generally deeper, and have more quality problems, and thus all of these reserve may not be economic to mine. The reserves listed for the period 2003 through 2017 are part of, or adjacent to, existing permitted mines. The reserves listed for the second 15-year period are accessible, but are beyond the reserves closest to the current or planned mines.

Table C-23. Recoverable Coal Reserve budget by mining period for the Book Cliffs coalfield in millions of short tons (coal beds ≥ 7 feet thick and with > 200 feet of cover, but < 2,500 feet of cover).

Reliability Category	Economic Resource Base		Minable Resource Base		Recoverable Reserve Base	
	2003-17	2018-32	2003-17	2018-32	2003-17	2018-32
Demonstrated	168.8	232.7	166.3	219.5	116.3	153.6
Inferred	3.1	4.5	3.1	4.5	2.2	3.1
TOTAL	171.9	237.2	169.4	224.0	118.5	156.7

Leasing of federal coal in the Book Cliffs coalfield has already tied up a majority (83.9 percent) of the 118.5 million tons of coal reserves identified as recoverable in the next 15 years (see appendix A and Map 6). Adding state and private leases held in this field would result in the total leased coal being over 90 percent of the recoverable reserves. Existing federal leases have also tied up about 45 percent of the 156.7 million tons of reserves identified for mining in the period from 2108 through 2032 years, and adding state and private leases would easily push the total leased coal to over 50 percent of those recoverable reserves. The largest block of currently unleased federal coal in the Book Cliffs is the old south lease block once held by Kaiser Steel at the far southeast end of the field.

Wasatch Plateau Coalfield

Remaining, in-place resources in the Wasatch Plateau coalfield are calculated to be 1,054.8 million tons. Carbon and Emery Counties contain the majority of these resources, but over 300 million tons also fall within Sevier and Sanpete Counties. These minable resources

are derived by limiting the maximum thickness to 14 feet, the maximum cutting height of current longwall equipment. This leaves in-place minable resources of 1,014.8 million tons. Using recovery factors between 25 and 70 percent for the various tracts identified, results in an estimated remaining recoverable coal reserve for the Wasatch Plateau coalfield of 686.0 million tons. The coal resources likely to be mined in the next 15 years in Carbon and Emery Counites are primarily adjacent to the existing mining operations at the Skyline, Bear Canyon, and Deer Creek mines (Map 41). The coal resources identified for mining during the period from 2018 through 2032 have reasonable access, but would generally entail permitting new mining operations. The remaining recoverable reserves in the Carbon and Emery County portion of the Wasatch Plateau field are sufficient for about 49 more years of production at annual rate of 14 million tons; however, further study of the coal quality of specific tracts might lead to further reductions of the recoverable reserve base, so this is a maximum disturbance scenario and not all tracts may be mined.

Table C-24. Recoverable Coal Reserve budget for Carbon and Emery Counties by mining period for the Wasatch Plateau coalfield in millions of short tons (coalbeds ≥ 7 feet thick and with > 200 feet of cover, but < 2,500 feet of cover).

Reliability Category	In-Place Resource Base		Minable Resource Base		Recoverable Reserves Base	
	2003-17	2018-32	2003-17	2018-32	2003-17	2018-32
Demonstrated	308.1	688.0	298.4	658.2	201.1	444.5
Inferred	23.6	35.1	23.3	34.9	16.3	24.1
TOTAL	331.7	723.1	321.7	693.1	217.4	468.6

Leasing of federal coal, as well as the state lease on the Mill Fork tract, has tied up 53.4 percent of the 217.4 million tons of coal reserves identified as recoverable in the next 15 years in the Wasatch Plateau coalfield (see appendix B). Adding in other state and private leases held in this field would result in the total leased coal being about 60 percent of the reserves to be mined in the next 15 years. Major areas of unleased federal coal in Carbon and Emery Counties that are likely to be mined in the initial 15 year period are the Cottonwood tract and the Flat Canyon tract.

Federal leasing of recoverable coal identified for mining in Carbon and Emery Counties for the period from 2108 through 2032 years has only tied up 18.6 percent of the 468.6 million tons of recoverable reserves, and adding state and private leases would push the total leased just a few percent higher. Large blocks of currently unleased federal coal in the Wasatch Plateau that are likely be developed in the second 15 year period occur in the North Horn

Mountain and Candland Mountain areas. Addition unleased federal coal occurs in Sevier County part of the Wasatch Plateau in the Ferron Canyon, Skumpah Canyon, and Old Woman Plateau areas, all within the southern part of the field.

Emery Coalfield

Original in-place economic resources for the Emery coalfield are estimated at 675.8 million tons (Doelling,1972). If we assume that the recoverable coal reserves for this field are a similar 66 percent of the estimated in-place economic resources as found in the Book Cliffs and Wasatch Plateau coalfields, then the recoverable reserves in the Emery coalfield are 446.0 million tons. This is very similar to the results of an earlier UGS study (Doelling and Smith, 1982), estimated that the remaining recoverable coal reserves in the Emery coalfield at 418.0 million tons. This remaining recoverable reserve estimate is presented in table C-25. Depending on the level of production that the Emery mine achieves after re-opening in 2002, the Emery coalfield could see its recoverable coal reserve base depleted by between 5 and 30 million tons over the period from 2003 through 2017. The Emery underground operation is the only anticipated mine development in the field in the next 15 years. Production at this mine will come initially from existing leases, but additional nearby coal will need to be leased to sustain production for more than five years.

Table C-25. Recoverable Coal Reserve budget by county for the Emery coalfield given in millions of short tons (modified from Doelling, 1982; for coal beds ≥ 4 feet thick and with ≤ 3,000 feet of overburden).

County	Original Reserve Base	Original Recoverable Reserves	Production (through 1998)	Remaining Reserves
Emery	830.544	248.250	9.545	238.705
Sevier	599.842	179.293	0.000	179.293
Total	1,430.386	427.543	9.545	417.998

Currently, federal leases of the recoverable coal reserves in the Emery coalfield have tied up only 880 acres of the recoverable reserves (all within Emery County), although past coal leasing and exploration in this field have been extensive. The additional state and private leases that exist would push the total leased coal to about 6,600 acres, and tie up at least 40 million tons of the remaining recoverable reserves in Emery County. This field contains substantial open federal acreage that could be leased for coal mining in the future.

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APPENDIX A

Recoverable and federally leased coal reserves in Carbon and Emery Counties by bed for the Book Cliffs coalfield, 2003-2017.

Coalbed Name	Thickness Range (ft)	In-place Tons	Minable Tons	Recovery Factor	Recoverable Tons	Federal Tons Leased
Castlegate A	6 - 11	1.1	1.1	0.6	0.7	0.7
Castlegate A	7 - 18	50.8	48.3	0.7	33.8	25.9
Gilson	6 - 12	30.3	30.3	0.7	21.2	10.4
L. Sunnyside	6 - 16	89.7	89.7	0.7	62.8	62.4
TOTAL	6 - 18	171.9	169.4	0.7	118.5	99.4

Recoverable and federally leased coal reserves in Carbon and Emery Counties by bed for the Book Cliffs coalfield, 2018-2032.

Coalbed Name	Thickness Range (ft)	In-place Tons	Minable Tons	Recovery Factor	Recoverable Tons	Federal Tons Leased
Wattis	7 - 11	24.3	24.3	0.7	17.0	9.2
Castlegate A	7 - 25	40.1	30.1	0.7	21.1	16.7
Castlegate B	6 - 12	13.7	13.7	0.7	9.6	3.5
Castlegate C	6 - 14	16.1	16.1	0.7	11.3	6.9
Castlegate D	6 - 19	45.6	42.4	0.7	29.7	17.9
Kenilworth	7 - 11	11.4	11.4	0.7	8.0	8.0
Gilson	7 - 14	28.4	28.4	0.7	19.9	1.3
Rock Canyon	7 - 14	13.0	13.0	0.7	9.1	0.8
L. Sunnyside	7 - 11	4.2	4.2	0.7	3.0	0.0
U. Sunnyside	6 - 14	40.3	40.3	0.7	28.2	6.8
TOTAL	6 - 25	237.1	223.9	0.7	156.9	71.1

APPENDIX B

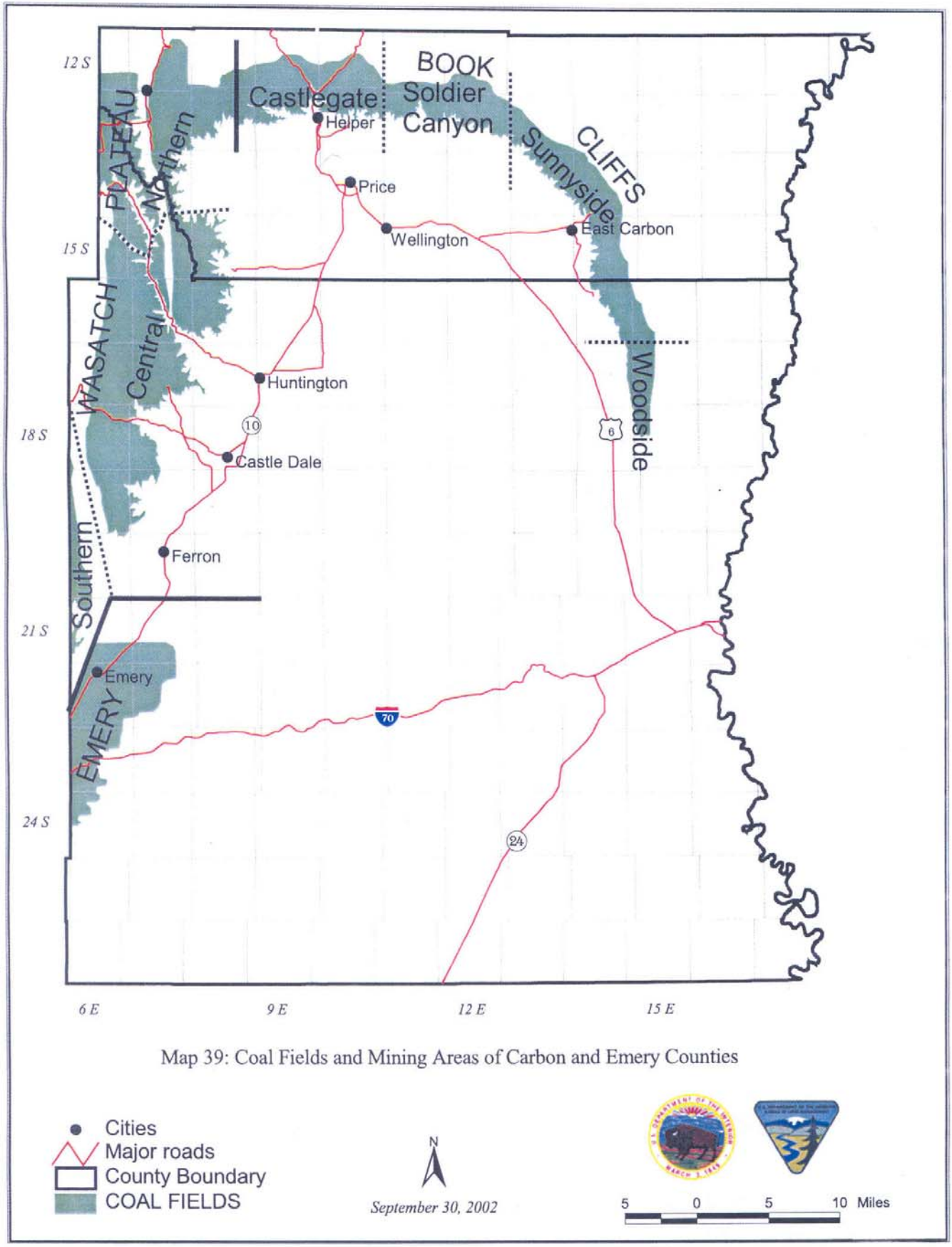
Recoverable and federally leased coal reserves in Carbon and Emery Counties by bed for the Wasatch Plateau coalfield, 2003-2017.

Coalbed Name	Thickness Range (ft)	In-place Tons	Minable Tons	Recovery Factor	Recoverable Tons	Federal Tons Leased
Acord Lakes	6 - 8	1.1	1.1	0.7	0.8	0.8
Axel Anderson	6 - 16	160.6	160.2	0.7	112.1	31.4*
Cottonwood	6 - 26	59.9	53.5	0.7	37.5	33.2
Blind Canyon	6 - 17	74.2	71.3	0.7	49.9	41.7*
Blind Canyon	6 - 12	8.0	8.0	0.5	4.0	3.3
Blind Canyon	6 - 14	10.4	10.4	0.25	2.6	0.0
Castlegate D	6 - 9	17.4	17.4	0.7	10.5	5.7
TOTAL	6 - 26	331.7	321.7	0.68	217.4	116.1

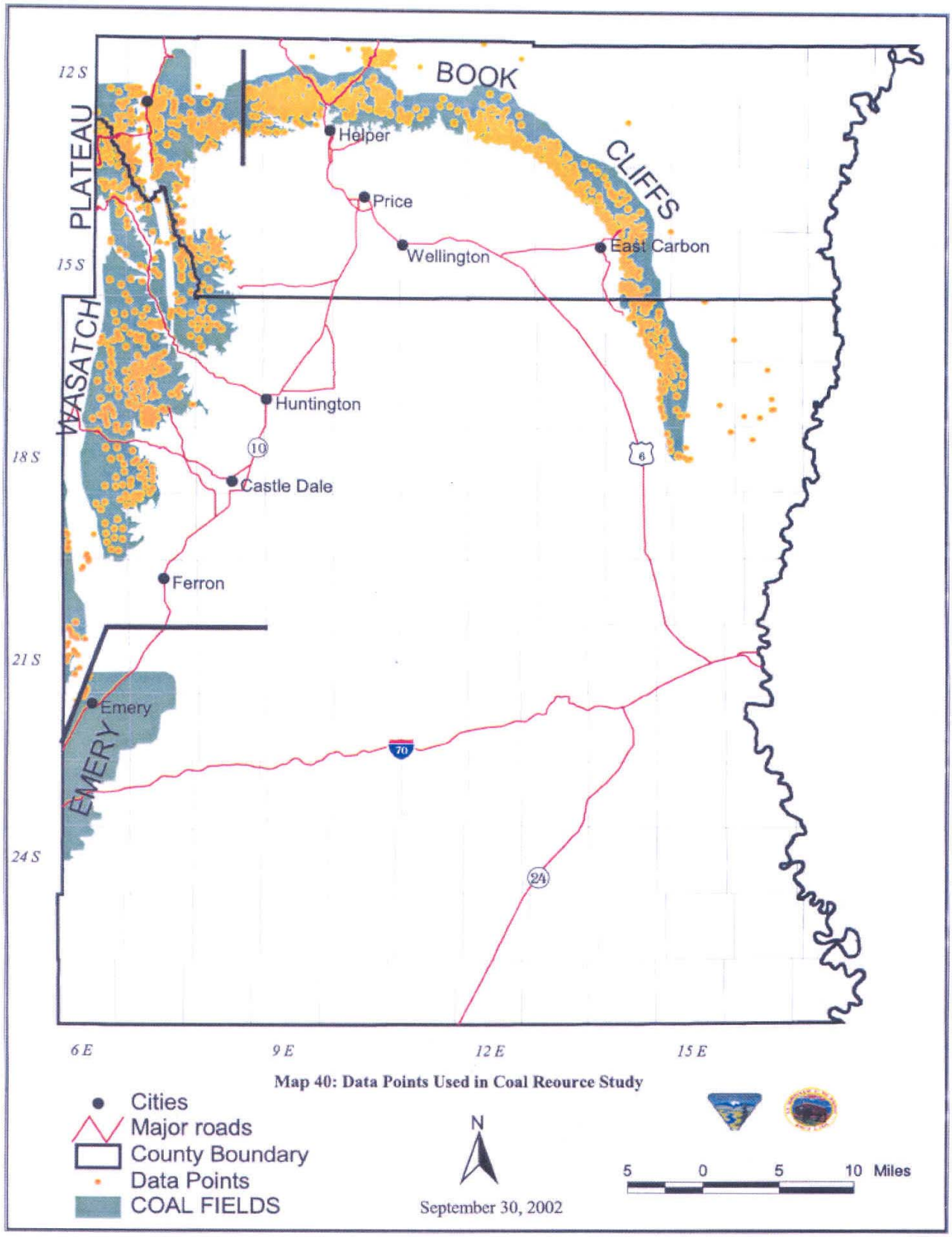
*includes Mill Fork state lease tract tonnage

Recoverable and federally leased coal reserves in Carbon and Emery Counties by bed for the Wasatch Plateau coalfield, 2018-2032.

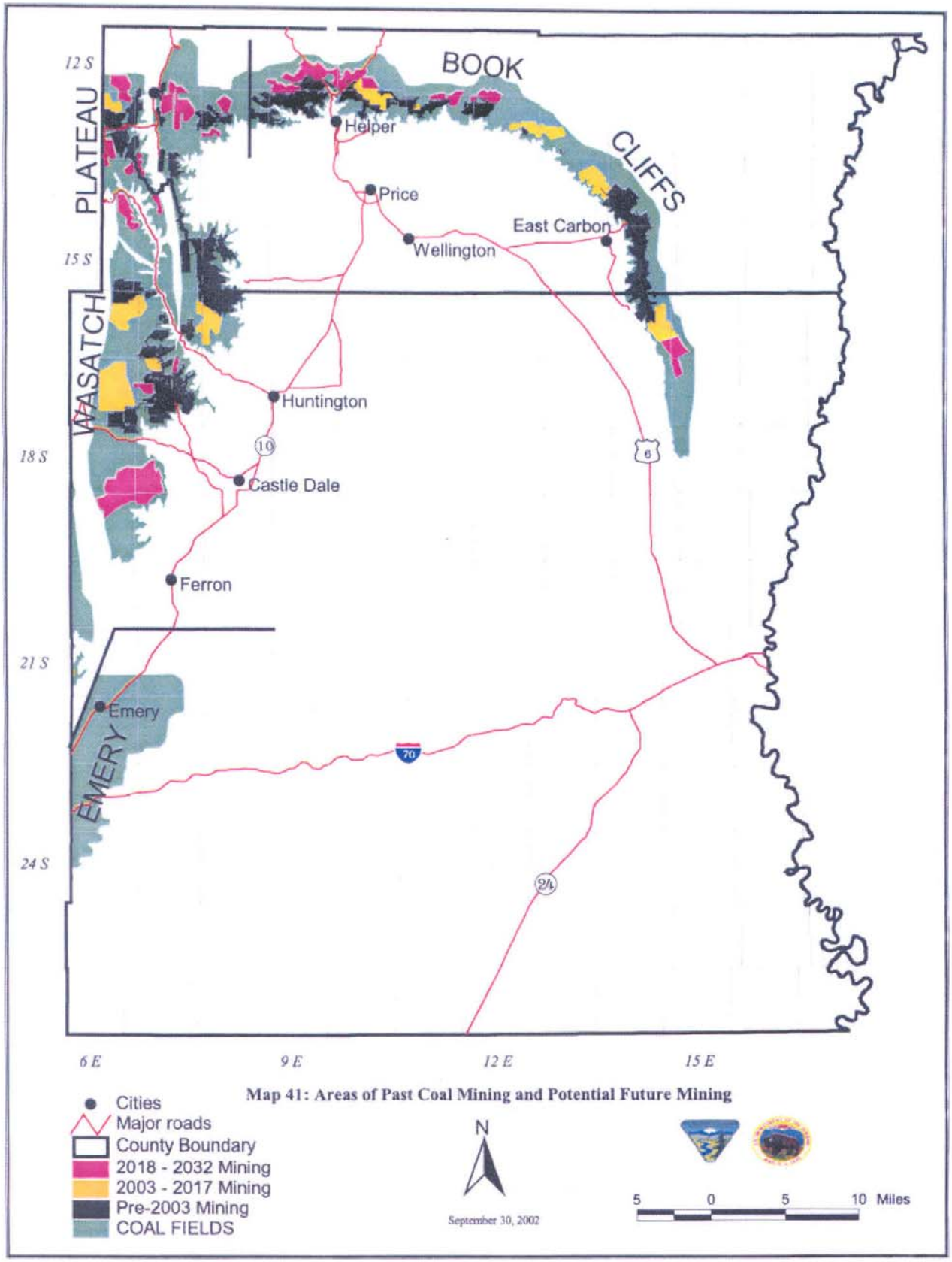
Coalbed Name	Thickness Range (ft)	In-place Tons	Minable Tons	Recovery Factor	Recoverable Tons	Federal Tons Leased
Knight	6 - 18	231.7	227.7	0.7	159.4	19.4
Acord Lakes	6 - 14	48.6	48.6	0.7	34.0	0.0
Axel Anderson	6 - 13	61.5	61.5	0.7	43.0	11.7
Cottonwood	6 - 30	30.9	27.0	0.7	18.9	8.0
Blind Canyon	7 - 26	188.7	168.1	0.7	117.7	8.0
Blind Canyon	6 - 13	4.8	4.8	0.5	2.4	2.2
Wattis	6 - 17	143.8	143.8	0.6	86.3	38.0
Gordon	6 - 19	13.1	11.6	0.6	6.9	0.0
TOTAL	6 - 30	723.1	693.1	0.68	468.6	87.3



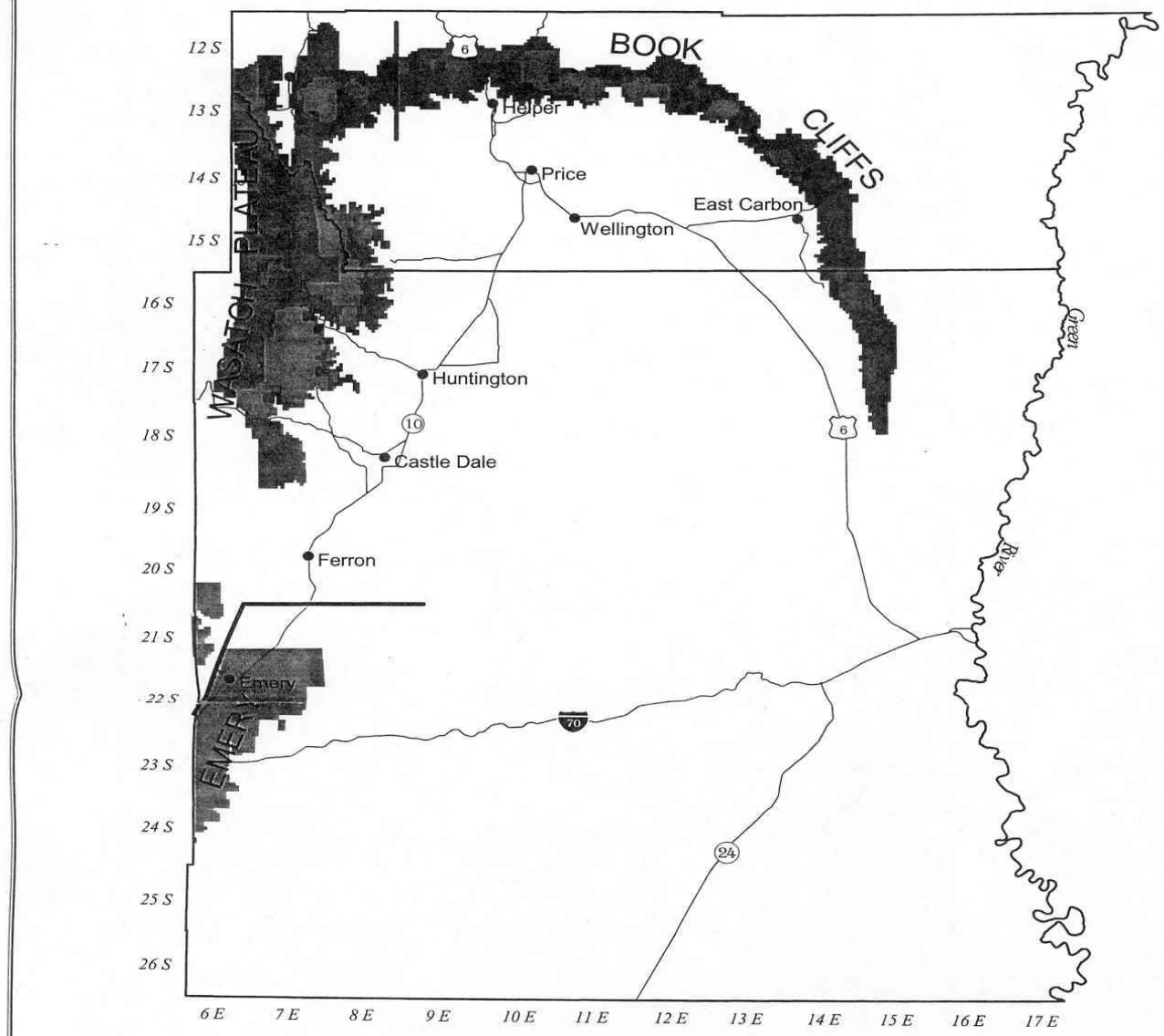
Map 39: Coal Fields and Mining Areas of Carbon and Emery Counties



Map 40: Data Points Used in Coal Reource Study



Map 41: Areas of Past Coal Mining and Potential Future Mining



Map 6: Known Recoverable Coal Resource Areas (KRCRAs), and Federal Coal Leases in the Planning Area

Cities
Major Roads
County Boundary
Federal Coal Lease
KRCRAs

N

September 30, 2002

Source: (BLM, 2002b)

5 0 5 10 Miles

APPENDIX 26

ACEC Evaluations for the Price Resource Management Plan

Introduction

Section 202 (c) (3) of the Federal Land Policy and Management Act (FLPMA) requires that priority be given to the designation and protection of areas of critical environmental concern (ACECs). FLPMA Section 103 (a) defines ACECs as public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

The BLM requested nominations for areas that the public may see as being appropriately managed as ACEC criteria in the Federal Register, Vol. 66, No. 216, November 7, 2001, Notice of Intent, Environmental Impact Statement, Price Resource Management Plan, Utah.

Nominations for ACECs were reviewed by an interdisciplinary team of BLM specialists to see if they meet mandatory relevance and importance criteria.

Relevance and Importance Criteria

To be considered for designation as an ACEC, an area must meet the requirements of relevance and importance as described in the Code of Federal Regulations (43 CFR 1610.7.2). The definitions for relevance and importance are as follows:

Relevance

An area is considered relevant if it contains one or more of the following:

1. A significant historic, cultural or scenic value (for example: rare or sensitive archaeological resources and religious or cultural resources important to Native American Indians).

2. A fish and wildlife resource (for example: habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity).

3. A natural process or system (for example: endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities; rare geologic features).

4. A natural hazard (for example: areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human

action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of the natural process.

Importance

The value, resource, system, process, or hazard described above must have substantial significance to satisfy the importance criteria. This generally means it is characterized by one or more of the following:

1. Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.

2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of the Federal Land Policy and Management Act.

4. Has qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare.

5. Poses a significant threat to human life and safety or to property.

Currently Designated ACECs

Table 1 identifies the existing 13 ACECs in the Price Field Office, which total 308,059 acres.

Table 1

ACEC	Acres	Values
Big Flat Tops	285	Relict vegetation
Bowknot Bend	1,087	Relict vegetation
Copper Globe	128	Historic mining district
Dry Lake	22,258	Archaeological, geological
I-70 Scenic	45,594	Scenic
Muddy Creek	28,778	Scenic, historic mining, riparian
Pictographs	7	Archeological
San Rafael Canyon	54,102	Scenic
San Rafael Reef	84,018	Scenic, relict vegetation
Seger's Hole	7,918	Scenic
Sid's Mountain	61,380	Scenic
Swasey Cabin	60	Historic ranching
Temple Mountain	2,444	Historic mining

Potential ACECs Being Considered in the Price RMP

External nominations were received as part of the RMP scoping process. BLM's interdisciplinary team completed the relevance and importance review of 23 nominated ACECs (44 sites). Many of these were determined to have relevance and importance and were included in the range of alternatives. In some cases the interdisciplinary team review resulted in additional resource concerns or modified boundary configurations for some potential and existing ACECs based on the information provided in the nominations.

In other cases, much of the same nominated areas where included within different potential boundaries or boundaries of existing ACECs, those delineated internally and those presented in the nominations. Determinations where then made by the interdisciplinary team to either include or exclude areas within the final boundary determination or analyze different boundary options in the range of alternatives.

On February 19, 2002 the Southern Utah Wilderness Alliance (SUWA) submitted ACEC nominations for Cedar Mountain (northern), Beckwith Plateau, Sid's Mountain, San Rafael River, Muddy Creek, Temple-Cottonwood-Dugout Wash, Price River, and the Lower Green River, which where evaluated for relevance and importance. SUWA submitted additional ACECs on April 24, 2003, which where also evaluated. These include Green River-Desolation Canyon, Range Creek, Molen Reef, Antelope Valley-Sweetwater Reef, Mussentuchit Badlands, Cedar Mountain (southern), and Nine Mile Canyon ACECs.

SUWA submitted a final list of potential ACECs on June 19, 2003, which include Dirty Devil Drainage, Lower Muddy Creek Drainage, Horseshoe Canyon Drainage, Quitchupah Creek, and Thousand Lakes Bench ACECs. With exception to Lower Muddy Creek Drainage ACEC, these nominations were deferred to the Richfield Field Office, also currently in the planning process, since these include areas predominantly within lands administered by that office.

The Utah State Wide Archeological Society worked with the BLM to identify, using various sources, 24 heritage, rockart, and historic uranium mining district sites to consider as 3 ACECs. They also identified for consideration Nine Mile Canyon, Range Creek, and Gordon Creek as ACECs.

In addition the BLM identified Cleveland-Lloyd Dinosaur Quarry as an area that should be considered as an ACEC.

New ACECs Considered with Alternatives in the Price RMP

Of the ACECs nominated, 10 ACECs (31 sites) were determined to meet the relevance and importance criteria and are considered as ACECs with optional sizes in various

alternatives in the RMP/EIS. These ACECs, with there maximum potential sizes, are discussed below:

Beckwith Plateau ACEC (56,980 acres)
Relevance: The proposed ACEC contains significant features that meet the relevance criterion including 1) the isolation of the plateau as a topographic feature separated by two rivers and 1,000 foot vertical cliffs; 2) surface exposed formations which record the eastward crowding of the Mancos seaway; 3) visible coal seams; and 4) excellent expression of erosional features of the book cliffs, such as castellated and buttressed upper slopes with complex badlands below.

The proposed ACEC contains crucial and high value habitat for many sensitive species, including the bald eagle, long-billed curlew, blue grosbeak, burrowing owl, common yellowthroat, ferruginous hawk, osprey, sage grouse, short-eared owl, big free-tailed bat, black-footed ferret, western red bat, spotted bat, ringtail cat, dwarf shrew, Townsend's big-eared bat, and the Utah milk snake. Sensitive big game species crucial and high value habitats are also present, and include desert bighorn sheep, and elk.

Sensitive plants may include the yellow blanketflower, Bookcliff blazing star, horse canyon stickleaf, and a hole-in-the-rock prairie clover.

Importance: The proposed ACEC area possesses a national important characteristic as a primitive outdoor classroom displaying the processes leading to the formation of coal in a classic regressive coastal sequence.

The sensitive species habitat occurring within the proposed area is fragile, irreplaceable, and vulnerable to adverse change.

Lower Green River ACEC (43,428 acres)
Relevance: The proposed ACEC incorporates all or portions of the existing Bowknow Bend ACEC which contains a relic plant community and significant natural history values, as well as the Dry Lake Archaeological District ACEC containing Paleo-Indian sites which are the rarest site type in Utah. The proposed ACEC would also include several large and dominant side drainages of Three Canyon, Keg Spring Canyon and Horseshoe Canyon. Much of the proposed ACEC corridor is surrounded and overlapped by existing WSAs, lands the BLM has found to have wilderness characteristics, and proposed wilderness.

The Green river provides nourishment to nearby plants as well as to resident and migrating birds and other wildlife. The proposed ACEC includes crucial and high value yearlong habitat for pronghorn, desert bighorn sheep, rockloving milkvetch, Moab Woodyaster, Jones Indigo-bush, Jane's Globemallow, Dalea Flavescens Var Epica. The area also provides crucial habitat for several listed state sensitive species including he bald eagle, long-billed curlew, burrowing owl, ferruginous hawk, peregrine falcon, grasshopper sparrow, Big Free Tailed Bat, black-footed ferret (federal and state endangered), spotted bat, and the Townsend's big-eared bat.

Associated riparian systems are excellent examples of riparian systems, including Horseshoe, Keg Springs, and Three Canyon. The Green River provides nourishment to nearby plants as well as to resident and migrating birds and other wildlife.

Importance: The proposed area includes opportunities for many primitive recreation activities including canoeing, rafting, fishing, hiking, camping, picnicking and sightseeing. Some roadless areas for solitude and naturalness also exist within the proposed area.

The exemplary integrity of the river system should be protected; the riparian areas and wetlands provide an oasis of rare and lush vegetation as well as water in an otherwise arid environment. The corridors created along the river are not only essential the survival of the total species of the region, but also provide habitats for a large number of special status species.

Temple-Cottonwood-Dugout Wash ACEC (80,818 acres)
Relevance: The proposed ACEC is designed to protect a unique, natural desert ecosystem with exemplary opportunities for primitive recreation and wildlife viewing in a landscape of huge skies, varied geologic forms, and unique riparian systems.
Due to the vast ruggedness of the area and formations such as the Flat Tops, Spire Point, The Sand Dunes, Wildcat and Rattlesnake Buttes, and many others provides an overwhelming sense of solitude.

The prevailing winds of the area carry sands into the entrenched Cottonwood Wash forming a unique vegetated sand dune system there, as well as in other areas within the proposed boundary.

The washes and springs combine with the open desert landscape forming a complete natural system that includes a large block of crucial yearlong pronghorn habitat. In additions the proposed region also contains important habitat for ferruginous hawk and big free-tailed bat, both special status species.

Relic plant communities that evolved without the influence of grazing animals remain in the Big Flat Tops area that is within an existing ACEC included within this proposed ACEC.

Importance: Opportunities for primitive recreation exist due to the solitude and ruggedness of the area.

This area has early to middle archaic lithic scatters present.

The solitude of the area; crucial pronghorn habitat (fawning) and the rare water sources is believed to all be threatened by oil and gas exploration development activities, ORV activity, and heavy grazing of domestic livestock.

Range Creek ACEC (80,632 acres)
Relevance: The proposed ACEC includes numerous pictograph and petroglyph panels, as well as habitation sites throughout Range Creek Canyon and it side canyons. These cultural resources are some of the most intact and well-preserved sites in the United States. An ACEC status will enhance their preservation.

Range Creek and its associated riparian areas as well as the surrounding canyons and ridges provide habitat for black bear, desert bighorn sheep, elk and mule deer. The area also provides high to crucial habitats for several state and federal special status species, including ferruginous hawk (BLM threatened species), short-eared owl, burrowing owl, long-billed curlew, Williamson's sapsucker, northern goshawk, bald eagle (federal threatened species), Virgin river montane vole, dwarf shrew, big free-tailed bat, Townsend's big-eared bat, ringtail cat, western red bat, and Utah milk snake. Because of its pristine qualities, the portion of Range Creek within the proposed ACEC is potential habitat for the reintroduction of the native Colorado Cutthroat Trout and is being considered as such the Utah Department of Wildlife Resources.

The proposed area features a unique desert riparian corridor that includes wetlands and riparian habitat supporting vegetation that includes sweetvetch, yellow blanketflower, Book Cliffs twinpod, gaillardia flava, and physaria acutifolia var purpurea epica.

Importance: The proposed Range Creek ACEC includes the unique and ecologically significant wetlands and creek system, numerous distinct geologic formations, and exceptional wildlife habitat.

Range Creek has nationally significant, outstanding cultural resources.

The crucial habitat that exists within the proposed ACEC provides for numerous wildlife species protection and is found unique to the area. For example the Utah milk snake was listed solely due to evidence of its declining population and is one of the few reptiles found at higher elevations in Utah. The dwarf shrew is extremely rare, with only three occurrences know in Utah. Other species that is unique to the proposed are include the Townsend's big-eared bat and the Virgin River montane vole.

The extraordinary Range Creek ACEC's riparian system- Range Creek and its undeveloped riparian areas crucial wildlife habitat, outstanding cultural resources, significant wildlife populations, and rugged canyon and ridges are of national importance as a model of functioning ecosystem and natural process.

The ecological, cultural, historic, and scenic values of this ACEC are at risk from various forms of human encroachments, including off-road travel, livestock grazing, water diversions, and energy development.

Nine Mile Canyon ACEC (62,885 acres)
Relevance: The proposed ACEC area possesses a significant and high density of historic, cultural, and archaeological zones. It is documented to contain the country's highest concentration of rock art panels, remnants of the prehistoric Fremont Culture. It also contains many relics of the post-Civil War era when the canyon was the site of a major freight line. Because of the vast cultural and historical resources throughout the canyon, the BLM has found the area to be eligible for National Register of Historic Places.

The proposed area provides significant and high quality wildlife habitat for the mule deer, elk, black bear, mountain lion, desert bighorn sheep, pronghorn antelope, cottontail rabbit, snowshoe hare, coyote, fox, badger, yellow-billed marmot, beaver, raven, black-billed magpie, pinyon jay, and side-blotched lizard. Also abundant in the area is the Chukar partridge, Sage, blue and Ruffed grouse, Ringnecked pheasant. Raptors including the golden eagle, prairie flacon, Redtail hawk, American kestrel and Cooper's hawk. The region is also known for its large wild horse herd.

Nine Mile Creek supports red shiner and speckled dace, in additions to roundtail chub, razorback sucker, flannelmouth sucker, Colorado Squawfish, and bluehead sucker. All special-status fish species that currently occur in the Green River are now suspected of moving up into Nine Mile Canyon.

There is outstanding opportunity for dispersed primitive recreation in portions of the area due its naturalness and solitude.

This ACEC nomination also contains habitat for or known occurrences of several special status plant species, including the Barneby's columbine, Shrubby Reed-mustard, gate Canyon buckwheat, Caespitose Cat's-eye, Mt. Bartle's buckwheat, Penstemon Grahammi, and Sclerocactus glaucus. Graham's Beardtongue, a candidate plant species for the Endangered Species Act, is also suspected to occur within this area.

Importance: This area is international significance for prehistoric archaeologically resources, nationally significant for cultural/historic resources, regionally significant for its scenic value, and has been found eligible for the National Register of Historic Places.

The area is vulnerable to adverse change including oil and gas development, as well as off-road vehicle use that is expanding into the area.

Gordon Creek ACEC (4,099 acres)
Relevance: Gordon Creek District is a very significant archeological resource. Two agricultural communities occupied it -a prehistoric Fremont cultural occupation about 1000 years ago and a historic pioneer occupation about 100 years ago. Although this situation existed elsewhere, the early abandonment of the historic occupation and a natural closure of the area have left sites relatively undisturbed and provide an opportunity to study the similarity and differences of the two cultural responses to the same area.

Importance: Although there are many other places where the Fremont and Historic peoples farmed the same area, Gordon Creek is unique. In most places the Historic activities turned into modern activities that has damaged or destroyed the Fremont and Historic sites. It now is the only known area where such study can take place.

The district has recently become more fragile and threatened, as oil and gas development increases on both sides and OHVs are developing trails up the middle of it. The area is being open up to the access of site vandals.

Heritage Sites ACEC (7 sites – 2869 acres)
Relevance: This ACEC includes several sites associated with the early historic uses on the public lands in Emery County including: Wilsonville, Shepherds End, Smith Cabin, Hunt Cabin, Copper Globe, Temple Mountain, and Swasey Cabin. A National Heritage Conservation Area has been proposed for the San Rafael area and these sites represent this heritage on public lands of that area.

Importance: As sites within a proposed National Heritage Conservation area, these represent historic uses of public land in the West.

These sites have recently become more fragile and threatened. Visitors not knowing the significance of these sites have been improperly using them (i.e. removing artifacts, removing wood from buildings for use of fire wood, ORV trails through sites, etc.).

Uranium Mining Districts ACEC (4 sites - 4161 acres)
These sites include Tidwell Draw, Hidden Splendor, Susan B, and Lucky Strike Mining Districts.

Relevance: ACEC includes several significant mining sites associated with the development of uranium as part of U.S. efforts during the escalation of the Cold War during the 1950s.

Importance: The sites are part of a National effort -the development of uranium as a deterrent in the Cold War. The history of these sites can only be retrieved by studies of the resources on the ground and oral histories.

These sites have recently become more fragile and threatened. Visitors not knowing the significance of these sites have been improperly using them (i.e. removing artifacts, removing wood from buildings for use of fire wood, ORV trails through sites, etc.). These sites are in danger of being destroyed before they can be studied.

Rock Art ACEC (13 sites – 18,139 acres)
This ACEC includes Black Dragon Canyon, Head of Sinbad, Lone Warrior, Rochester/Muddy Petroglyphs, Big Hole, Cottonwood Wash, Wild Horse, Sand Cove, Dry Wash, Short Canyon, North Salt Wash, Molen Seep, and Kings Crown.

Relevance: These sites are some of the best examples of prehistoric Rock Art on the Colorado Plateau. Many are world-famous. They are being visited more every year. Their popularity has grown following mention in several publications including National Geographic (Smith, 1980; Schaafsma, 1971: and Castleton, 1984) and being identified as part of the San Rafael National Heritage Area.

Importance: In addition to the discussion under Relevance, a big conflict that presently threatens these sites is between the public use of rock art and the destruction of the scientific potential of the associated archaeological sites. Also the surrounding lands are public lands used by OHVs, grazing, and mineral exploration.

Cleveland-Lloyd Dinosaur Quarry ACEC (765 acres)

Relevance: The Cleveland-Lloyd bone deposit itself is the densest concentration of Jurassic dinosaur bones in the world. It is also the world's largest collection of a large meat-eating dinosaur (*Allosaurus fragilis*) yet found. Eighteen scientific papers published in the last 10 years have been written about the place and it still remains unsuccessfully explained. The 767 acres included in this proposed ACEC includes the Cleveland-Lloyd deposit and adjacent lands. The adjacent lands have a minimum of 15 dinosaur track sites containing at least 35 dinosaur tracks. Since 1992, when one was first discovered, new tracks have been located on almost an annual basis. These adjacent lands also have a minimum of 32 sites where dinosaur bone is visible at the surface. At least one-third of these are easily identifiable as fossilized bone by anyone walking by. The others are identifiable by persons with a bare minimum of training.

Importance: The Cleveland-Lloyd deposit itself is one of a kind, unique in the world. It is still not understood how it came to be and continues to receive attention from research paleontologists. Because of the deposit, the area around it also receives a lot of attention, both from scientists and the interested public drawn from across the nation and around the world. Cleveland-Lloyd deposit and adjacent lands represent an exceptional opportunity for scientific and educational use of fossils to educate the interested public in fossiliferrous and geologic matters.

Special management attention is required to protect known and undiscovered paleontological resources in the proposed ACEC. Guided tours into the adjacent lands by the BLM Staff at Cleveland-Lloyd are commonly given to those interested in learning more about dinosaurs and geology. The tours must be staff-guided because many of the fossils are exposed at the surface and are fragile. Also, past experience at other public sites has demonstrated that publishing a map with vertebrate fossil locations allowing for self-guided tours results in an increase of unauthorized, illegal collection of fossils.

Appendix 27

Unsuitability for Mining Document: Federal Lands in the Price Management Area

Introduction

As part of the objectives of the Federal Government to provide for leasing of coal under the Mineral Leasing Act of 1920, as amended, regulations were established to provide policy and procedures for considering development of coal deposits through a leasing system involving land use planning and environmental analysis. This document summarizes the federal coal management decisions for the planning area and documents the unsuitability criteria applied to potential coal lands for future development. A brief summary of the process used to arrive at the coal management decisions is briefly explained. This summary is intended to help the public understand the federal coal management program, as it applies to the planning area, and to show the requirements that must be met under the regulations at 43 CFR 3400. These planning decisions will guide the development of the federal coal resource in this area for the next 15 to 20 years.

To implement competitive coal leasing under the regulations contained in 43 CFR 3420, the BLM established, in 1979, a number of federal coal production regions. The coal fields within this planning area are included in the Uinta-Southwestern Utah Coal Region. A regional coal team was established to guide the competitive leasing process in the region. Initially, coal leasing was to be implemented through a regional leasing process where potential coal tracts were delineated, ranked, and offered for lease to meet leasing targets established by the Secretary of the Interior. Later, the Department recognized that most coal leases were being offered as maintenance tracts for existing operations. Therefore, the Unita-Southwestern Utah Coal Region was decertified and a decision was made to continue leasing using the leasing on application procedures outlined in 43 CFR 3425. Presently, coal tracts are leased in response to applications initiated by industry.

Coal Planning Process

The major component to guide the Secretary on making coal leasing decisions is the land use plan. Identification of areas acceptable for further consideration for coal leasing is a major land use planning decision. These lands for further consideration shall be identified through a screening process (43 CFR 3420.1-4). The first step in this process identifies only lands that have coal development potential. The second step is to review Federal lands during land use planning to assess where there are areas unsuitable for all or stipulated methods of mining using the unsuitability criteria set forth in 43 CFR 3461. The third step evaluates multiple land use decisions (trade-offs) that may eliminate lands from leasing that contain resources presently deemed more important that coal. The fourth step requires surface owner consultation for private surface lands overlying Federal coal.

For the Price RMP, the lands identified as being suitable for further consideration for leasing were identified using the following steps and criterion:

Step 1: Identification of Coal Development Potential.

Lands in the planning area that have coal development potential are shown in map 41 of the Coal Resources Report (Tabet, 2003) as colored areas showing development in two time frames, 2003-2017 and 2018-2032. These combined areas constitute the identification of coal development potential for the time frame of this planning effort. Included in these potential areas are current coal leases and unleased Federal coal where we believe development may occur by 2032. These are the areas that will be brought forward for the coal unsuitability review.

Step 2: Unsuitability Review

For those lands that have been identified as having development potential, BLM reviews whether these lands can be considered suitable for development through consideration of 20 criteria (based mostly on resource values) as outlined in 43 CFR 3461. These criteria were applied in a broad sense in the previous land use plans (San Rafael RMP and Price River MFP with coal amendments). The current planning effort will carry forward unchanged unsuitability determinations from the previous reviews. In addition, much of the Wasatch Plateau coal field, except the northeast corner, is under National Forest system lands and unsuitability has been addressed in the Land and Resource Management Plan that was prepared by the Manti-La Sal National Forest in 1986.

In applying each criterion to the high development potential lands, the phrase "shall be considered unsuitable" is to be shorthand for "shall be considered unsuitable for all or certain stipulated methods of coal mining involving surface coal mining operations". Some criterion have exceptions or exemptions as listed in the regulations. If the exemption or exception for a specific criterion can be applied, the coal lands being evaluated would not be considered unsuitable and could be considered for leasing. The regulations outlining the procedures for unsuitability determinations provide, "Federal lands with coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations (43 CFR 3461.1 (a)). Surface coal mining operations as defined in 43 CFR 3400.0-5 (mm) "means activities conducted on the surface of lands in connection with a surface coal mine or surface operations and surface impacts incident to an underground mine".

In other words, unsuitability criteria will be applied to all coal lands that have potential to be recovered by surface mining methods (i.e., where earthen material above the coal beds is physically moved to access the coal beds along with areas where associated support facilities and structures are located). "Surface operations and surface impacts" applies to underground mines for the support facilities and structures built on the surface and the surface disturbance that it causes. Therefore, lands will generally be considered to be unsuitable for further consideration for leasing if the expected mining activities would

result in direct impacts to the surface. Because most of the areas identified as having development potential represent deep coal deposits with no clearly defined areas where surface impacts would occur, the unsuitability criteria will not be applied to the lands where the deposits will be developed only through underground mining.

For this planning effort, the unsuitability criteria were applied to the areas with development potential that could possibly be developed using surface mining methods. In this, the areas for assessment are significantly reduced. Except for one small 120 acre parcel in the Wasatch Plateau, all the coal in the Book Cliffs and Wasatch Plateau coal fields where development is anticipated is deep with little potential for surface facilities. The Emery coal field along the southwest border of the planning area has some areas with surface mining potential in the flat lands south of the town of Emery known as Walker Flat. The coal report (Tabet, 2003) did not identify this area as having development potential, but the State of Utah expressed interest in obtaining these lands through an exchange. This indicates that these lands could possibly be developed in the life of the plan.

CRITERION 1

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Recreation Areas, land acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, town, and villages.

Analysis

With the exception of National Forest lands, there are no lands within the planning area that include any of the stated land systems or categories. The National Forest system lands overlay much of the Wasatch Plateau coal field and the unsuitability criteria were applied through preparation of the 1986 Forest Plan. For the National Forest lands, an exception to this unsuitability criterion would apply because any potential surface impacts and operations will be incident to an underground mine. In the San Rafael RMP, 160 acres of federal lands that are incorporated within the town of Emery, Emery County, Utah were identified as unsuitable. These unsuitable acres are outside the current potential development area but inside the Emery KRCRA. It is not likely that these lands will be developed during the planning period. However this unsuitable determination should be continued at this time as even underground mining under these 160 acres (used for water storage tanks and communication sites) would not be desirable. Negotiations were underway to title the land over to private ownership but the outcome is not final at this time.

CRITERION 2

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

Analysis

No coal lands under any rights-of-way or easements across the Book Cliffs coal field and the public land area of the Wasatch Plateau coal field were found to be unsuitable due to the underground mining exemption. The Emery coal field inside the planning area has one right-of-way in the Walker Flat surface mining potential area. However, this right-of-way was for a power line for mining purposes to the reclaimed Dog Valley Mine and the line has now been removed. Thus this right-of-way fits the exceptions (ii) and (iii) in that the line was for mining purposes and the purpose for the right-of-way is not being used.

CRITERION 3

Federal land affected by Section 522(e) (4) and (5) of SMCRA shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public highway or within 100 feet of a cemetery, or within 350 feet of any occupied public building, school, church, community or institutional building or public park or within 300 feet of an occupied building.

Analysis

No coal lands were found unsuitable in the Book Cliffs coal field and the public land area of the Wasatch Plateau coal field due to the underground mining exemption. Highways I-70 and U-10 cross about 2 and 3.5 miles respectively from public lands above the Emery coal field that may be potentially mined by surface mining methods. Highway I-70 (500-foot-wide right-of-way), Highway U-10 (400 foot right-of-way), and the lands within 100 feet of the outside line of both right-of-way are unsuitable for surface mining.

They may be suitable for leasing with stipulations to protect these public highways from any damage associated with underground mining. About 7 miles of other public roads cross over the Emery coal field that may be potentially mined by surface mining methods. These could be unsuitable for surface mining within 100 feet of the outside line of the right-of-way of the public road. No cemeteries, public buildings, schools, churches, community or institutional buildings, public parks, or occupied dwellings are known to exist on any public lands overlying the high potential development areas of any of the coal fields.

CRITERION 4

Federal lands designated as wilderness study areas (WSAs) shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation.

Analysis

No WSAs exist in the Wasatch Plateau or Emery coal fields. Approximately 445 acres of the Turtle Canyon WSA overlies a high development potential area of the Book Cliffs coal field. This is the Lila Canyon/Little Park lease area located at the furthest southeast portion of the coal field. Of these 445 acres, 139 acres is already under lease and is subject to valid existing rights. The other 306 acres of unleased Federal coal with high development potential is not assessed unsuitable due to the underground mining exemption particularly because the coal under this area is deep (1500+ feet) and cannot be surface mined. However, under the third screen for further leasing considerations, the BLM policy as established under the Wilderness IMP withdraws all mineral leasing from WSAs and as such, 306 acres of the Book Cliffs coal field is withdraw from further consideration for coal leasing due to WSAs.

CRITERION 5

Scenic federal lands designated by visual resource management (VRM) analysis as class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

Analysis

No lands were found unsuitable in the Book Cliffs coal field and the public lands of the Wasatch Plateau coal field due to the underground mining exemption. About 160 acres of public lands along the I-70 corridor overlying the Emery coal field that has potential for surface mining methods, are identified under the No Action and C alternatives as VRM class I areas. VRM class I areas are unsuitable for surface coal mining methods with the exception that a lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

CRITERION 6

Federal lands under permit by the surface management agency and being used for scientific studies involving food or fiber production, natural resources or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency give written concurrence to all or certain methods of mining.

Analysis

No lands under any of the coal fields are being used for these types of studies.

CRITERION 7

All publicly owned places on federal lands which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and the State Preservation Office, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

Analysis

No known sites are within the three coal fields with high development potential. The Rochester-Muddy petroglyph site is on the National Register of Historic Places. This site is in the Emery coal fields but outside the area of any potential development. This site was assessed as unsuitable for surface mining methods in the San Rafael RMP. This site should be brought forward in this planning effort with the same prescriptions, which is: suitable for further leasing but with no surface disturbance within 0.25 miles of the site and no under ground mining will be allowed within this 0.25 mile buffer without consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office.

CRITERION 8

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

Analysis

There are no Federal lands within the three coal fields with high development potential that are designated as national natural landmarks.

CRITERION 9

Federally designated critical habitat for threatened or endangered (T/E) plant and animal species, and habitat for federal T/E species which is determined by the Fish and Wildlife Service (USFWS) and the surface management agency to be of essential value and where the presence of T/E species has been scientifically documented, shall be considered unsuitable.

Analysis

Some areas of T/E species and/or habitat overly areas of the Book Cliffs coal field. However, the underground mining exemption applies to these lands. No T/E species and/or habitat overly areas of the Emery coal field with surface mining methods potential.

CRITERION 10

Federal lands containing habitat determined critical or essential for plant or animal species listed as T/E by the state pursuant to state law shall be considered unsuitable.

Analysis

No areas of critical habitat for state designated T/E species overly any of the coal fields. This will need to be reviewed in the future and prior to leasing.)

CRITERION 11

A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Analysis

Some known active golden eagle nest sites are on the Book Cliffs and public lands on the Wasatch Plateau coal fields. These sites were not declared unsuitable due to the underground mining exemption. No known active golden eagle nest sites are located in the potential surface mining area of the Emery coal field. Future leasing near or including active golden eagle nests will have surface disturbance conditions imposed for buffer zones around active eagle nest sites.

CRITERION 12

Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

Analysis

No known bald or golden eagle roosts or concentration areas exist within the three coal fields. Eagles do visit the area during the winter, but no critical habitat areas have been identified.

CRITERION 13

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Analysis

There are known nest sites on the Book Cliffs and public lands of the Wasatch Plateau coal fields. These lands were not declared unsuitable due to the underground mining exemption. Known nest sites also occur in the Emery coal fields (analysis of actual number and sites is not yet complete). The nest sites and buffer zones around the sites are unsuitable for surface mining. These areas are suitable for future leasing with imposed surface disturbance restrictions around the nest sites.

CRITERION 14

Federal lands that are high priority habitat for migratory bird species of high federal interest on a regional or national basis, as determined jointly by the surface management agency and USFWS, shall be considered unsuitable.

Analysis

Migratory bird species of high federal interest are found or have the potential to occur within the three coal fields. These lands were not declared unsuitable due to the underground mining exemption. Areas of high priority habitat for migratory bird species are suitable for future leasing but with stipulations to protect habitat from surface disturbances.

CRITERION 15

Federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for resident species of high interest to the state, and which are essential for maintaining these priority wildlife species, shall be considered unsuitable.

Examples of such lands which serve a critical function for the species involved include: (i) active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken; (ii) winter ranges crucial for deer, antelope, and elk; (iii) migration corridor for elk; and (iv) extremes of range for plant species.

Analysis

CRITERION 16

Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of mining.

Analysis

There are no lands in the high coal development potential areas of the Book Cliffs coal field that underlie lands with this criterion. Public lands in the Wasatch Plateau coal fields and the Emery coal field are not unsuitable for mining due to the underground mining exemption.

There are about 60 acres of public land within the surface mining potential area of the Emery coal field, which are in the 100-year flood plain of Ivie Creek. These acres are unsuitable for surface mining. However, future leasing for surface mining could occur with special stipulations to protect life and property within these flood plains.

CRITERION 17

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Analysis

There are some public lands inside the Book Cliffs coal field that have been committed by BLM as municipal watersheds. These lands are not unsuitable due to the underground mining exemption. Likewise with public lands within the Wasatch Plateau coal field. Municipal watersheds for Huntington, Orangeville, and Ferron are on some public lands within this coal field but outside the Forest boundary. Again these lands are either already under coal leases or not unsuitable due to the underground mining exemption. No lands in the Emery coal field are within any committed municipal watersheds.

CRITERION 18

Federal lands with national resource waters, as identified by states in their water quality management plans, and a buffer zone of federal lands 0.25 mile from the outer edge of the far banks of the water, shall be unsuitable.

Analysis

The Utah Division of Water Resources has not identified any federal lands with national resource waters.

CRITERION 19

Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in 43 CFR 3400.0-5 (a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside and alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Analysis

No alluvial valley floors overlay federal coal lands of either the Book Cliffs coal field or the public lands of the Wasatch Plateau coal field. The Office of Surface Mining Reclamation and Enforcement tentatively identified 300 acres of BLM land as alluvial valley floor along Muddy, Quitchupah, and Ivie Creeks that are within the Emery coal field but outside the Emery potential surface mining area. These lands are not unsuitable for surface mining due to the underground mining exemption. These tentatively identified alluvial valley floors are suitable for future coal leasing with stipulations to ensure the underground mining would not "…interrupt, discontinue, or preclude farming…" of these areas (quotation from prior paragraph).

CRITERION 20

Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the planning area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

Analysis

An Indian tribe nor the State of Utah have proposed and the Secretary has not adopted any other criteria.

Note: A small (about 120 acres) parcel of Federal coal lands that lie in the Wasatch Plateau coal fields but outside the National Forest, has potential for development with surface mining methods. The area is located aside Pleasant Valley near Clear Creek, Carbon County, Utah. No unsuitability assessment was analyzed as the surface estate is privately held and outside the purview of Federal unsuitability. Future consideration for coal leasing on this tract moves to screen # 4, surface-owner consultation.